MEDICAL RECORD

A National Review of Medicine and Surgery, Established 1843

VOL. 155, No. 7 WEDNESDAY, APRIL 1, 1942 WHOLE No. 2710

Philippine Lepers and the Japanese Blockade

Six thousand lepers and their several hundred medical and nonmedical attendants on the Philippine island of Culion, the largest leper colony in the world, face starvation unless the Japanese naval blockade is lifted to permit food supplies to reach the island. Culion is on the western edge of the Philippine archipelago, 180 miles south of Manila in the China sea. Its sole inhabitants are the lepers and their attendants, a number of whom are Americans, including Dr. H. Windsor Wade, medical director, and his wife.

Perry Burgess, president of the Leonard Wood Memorial, the laboratories of which are on the island, recently disclosed the colony's plight. The island is extremely arid and cannot support its population. Some of the colonists have fishing boats, but the inhabitants have relied for their staple foodstuffs of fish and rice mainly on outside fishermen, mostly Japanese who furnished the supplies on contract. Mr. Burgess has sought the aid of the Red Cross to get relief to the inhabitants. The Red Cross has made a request of the Japanese Government through the Swiss Government for permission to purchase a cargo of rice and send it to Culion. Vital medical supplies, before the war, were ferried to the island from Manila.

In 1632, according to *Time*, the Shogun of Japan, then busy extirpating Christianity with fire and sword, loaded 134 "converted Christians" on a ship and sent them to the Spanish missionaries in Manila with a letter saying: "If it is converts you want, begin with these." They turned out to be lepers, and soon spread the disease. Before 1632 there was no leprosy in the Philippines.

According to Dr. E. R. Kellersberger, general secretary of the American Mission to Lepers and founder of the Bibanga Leper Colony in the Belgian Congo, there may be a marked increase in the incidence of leprosy as a result of the war. War means overcrowding and poor and inadequate food—precisely the conditions that help the spread of any disease. For lack of exact statistics there is no way of telling whether or not leprosy is spreading in the United States. Probably it is not, because it flourishes best in humid, tropical or subtropical climates. Dr. F. A. Johansen, Carville, La., stated that, as an important public health problem, leprosy in this country is limited to three states, Louisiana, Texas and Florida, where endemic foci exist. In the Federal Leprosarium at Carville, La., the total number of lepers was 382 in December 1941. There are perhaps one thousand to two thousand outside of the Leprosarium, most of them going about their business.

Strange Dangers of Air Raid Shelters

A hitherto unmentioned danger of air raid shelters has been reported by Dr. Keith Simpson, of London, in the *Lancet*. The danger is that of death from pulmonary embolism which threatens elderly people forced to spend the night in a sitting or reclining position in air raid shelters. Dr. Simpson reports a sixfold increase in deaths from this condition. The patients died suddenly, usually after leaving the shelters after a night or a succession of nights in them. Most of them were elderly, a little obese, and often had varicose veins in the legs. The precipitating condition seems to be a long period of rest in a deck chair or some similar seat, the front edge of which pressed into the legs as they lay over it, compressing the veins and causing obstruction, edema, and thrombosis. Elderly people who are forced to spend long periods in air raid shelters must be given provision for lying down. Dr. Simpson stated that cases of fatal pulmonary embolism are already decreasing, concurrently with the provision of bunks for sleeping.

When all London rushed for shelters and subway stations in response to wailing sirens, it was discovered that men, women and children had been bitten by mosquitoes. The insects caught belonged to the species Culex molestus. At first it was thought that the Culex had found its way from above ground into the shelters and stations and that it was settling down in cold damp quarters to hibernate. But a search for breeding grounds was successful. They were found over a wide area, usually in excavations below the underground railway lines and under station platforms. In most cases the water was only a few inches deep but in pools a hundred yards long. Larvæ were found in the water.

The crowding of large urban populations into shelters has been recognized as offering increased hazards with respect to epidemics. The diseases communicated

by droplet infection are those most difficult to control. According to Andrews, of London, spraying bactericidal substances into the air as a fine mist was found to reduce the number of infected particles considerably. The solution recommended is one-half to one percent sodium hypochlorite. Mist from five cc. of this solution is sufficient for one thousand cubic feet of air. The odor is slight, but the mist will tarnish metal. All measures possible should be used to control dust; treating floors with crude liquid paraffin was found effective for this purpose. The most effective precautionary measures that can be taken are adequate spacing of persons and ample ventilation; in many shelters, however, these are impossible.

Why Women Shiver in a "Warm" Room

Have you ever noticed how seldom a man and his wife agree on the proper temperature for a room? The women may feel comfortable while their husbands feel uneasy and cannot stand the heat; or the men feel comfortable while their wives shiver in the cool living room. As a result, buildings are usually overheated in winter for the sake of women and overcooled in summer to suit the men.

Constitutional differences between men and women, as well as differences in kind and amount of clothing worn, are believed to be responsible for the double standard of comfort, but according to recent studies of C. P. Yaglou and Anne Messer, of the Department of Industrial Hygiene, Harvard School of Public Health, Boston, differences in clothing appear to play a major rôle. Most of the women in the survey found a temperature of nearly seventy-six degrees the most comfortable, while at that point the men were sweltering. When men and women were dressed alike, they were comfortable at about the same temperature. With a minimum of clothing, a temperature of about eighty-two to eighty-three degrees was good enough for both sexes.

When men were dressed in women's summer clothes, which weighed eight-tenths of a pound (excluding shoes), they wanted a temperature of eighty degrees, which is about as high as that preferred by women similarly dressed. But when the men wore their own summer clothes (weighing three pounds) they wanted a temperature of seventy-six degrees. Conversely, when women wore men's winter clothes, weighing six and one-fifth pounds, instead of their own one and one-half pounds, a temperature of seventy-two degrees was required, which is only half a degree higher than that preferred by men wearing similar clothes.

The difference in comfort standards for men and women could be reconciled by adjustments of clothing, according to the individual susceptibility to cold or heat. If women would wear in winter clothes that are comparable in warmth with those worn by men, they would be comfortable in a temperature of seventy degrees instead of seventy-six, and there would be less discord in the matter of temperature. On the other hand, if men would take off their vests, coats and collars in hot weather, buildings would not have to be cooled below eighty-three degrees, instead of seventy-six to eighty as at present. Incidentally, the elimination and reconciliation of the double temperature standard for men and women would reduce the expense of heating and cooling buildings. The problem of the building engineer would be greatly simplified in this way. Except in distinctly warm and humid atmospheres, humidity had no appreciable influence on the results of the experiments. Women's dress in winter may be too light sometimes, but it has a big advantage: it can be regulated much better than man's clothing, according to actual needs, by the addition of a jacket or a sweater.

Trauma and Cancer

It is somewhat generally believed, and the belief has been fostered by textbooks and monographs on cancer, that a single trauma is of itself capable of producing a malignant growth at the site of the trauma. Dr. Cecil A. Toll, senior surgeon, Royal Free, Royal Cancer and Miller General Hospitals, London, contributed a paper on trauma and cancer to the *West London Medical Journal*, October, 1940. Dr. Toll discusses the subject from various aspects and opposes the view that a single trauma, that is, a definite injury, can of itself produce a malignant growth at the site of the trauma. He points out that research into the etiology of cancer, particularly during the past two decades, has tended to minimize to the vanishing point the importance of trauma in carcinogenesis, while establishing beyond a peradventure a large number of carcinogenic bodies of known chemical constitution, yet our current teaching, as revealed in students' manuals, etc., in relation to "traumatic cancer" seems to have remained unaltered.

Again, in the conception of a truly traumatic cancer there is a sort of corollary or rider which makes it appear that injury can and does stimulate or aggravate an existing cancer to a more rapid growth, to wider and more rapid dissemination, or to the determination or selective localization of secondary deposits at the injured site. This view commends itself to the clinician and to the law courts in compensation cases because of its apparent reasonableness; yet here again cancer research answers that the evidence of traumatic aggravation is negligible and of selective localization very slight.

A summary of Dr. Toll's conclusions is as follows: Reliable evidence that a single trauma can produce in its train, early or late, a malignant tumor is wholly

lacking. In his own twenty-five years' experience at the Royal Cancer Hospital and elsewhere he has never seen a case of traumatic cancer which on critical examination could be substituted as such. The evidence that injury can aggravate an existing malignant growth is very unsatisfactory, unless the injury be of such a nature that an open wound is inflicted and pathogenic microorganisms introduced from without into the tumor. Only in very advanced or very rapidly spreading neoplasms is injury capable of producing metastases by selective localization. Dr. Toll ends by declaring that there is urgent necessity for bringing our teaching of medical students and practitioners on this subject into line with the progress of modern cancer research, and this should eventually bring about a necessary reform in the attitude of law as well as medicine to traumatic cancer.

These views on a matter about which there has long been divided opinions are pertinent and deserve earnest consideration.

Drugs in Wartime in India

India's stock of essential drugs is sufficient to last two years on the basis of the existing requirements. The drug resources of the country have been so mobilized that it is asserted every drug for which basic materials are available in India is now manufactured there.

Before the war as many as 411 items of drugs were imported from abroad, many from Germany, while only 123 items were produced locally. The latest position is that as many as 292 items are manufactured in India while 242 items are imported. The United Kingdom still maintains her pre-war position to a large extent in the matter of drug imports into India subject to the availability of shipping space. South Africa and Australia have largely replaced Germany in the Indian drug market.

The effect of the planning of production is that almost all the textile items are already produced in India, while five hundred out of six hundred items of surgical appliances are also now produced in India. Similarly, all kinds of vaccines and some sera, such as antidiphtheritic and antianthrax serum, are produced in India. A beginning has also been made in the manufacture of catgut. India, however, still largely depends on foreign imports for most of the sera and drugs such as potassium, bromide, aspirin, bismuth carbonate and phenacetine.

Many items, the manufacture of which was initiated by the Medical Stores Supply Committee, are now coming into production. The first batch of Indian extracted emetine hydrochloride has been received. Substantial amounts of the following drugs are manufactured: amyl nitrite, atropine sulphate, boric acid, nikethamide, peptone, tetanus antitoxin, sodium tauroglycocholate, and trichloracetic acid. Considerable progress was reported on the help received from university organic laboratories in India producing certain bacteriological stains and dyes. Various substitutes to be used in place of imported items were decided upon, for example, vegetable laxative mixture for extractum cascara sagrada liquid, and pulvis kaolin comp. for bismuth carbonate. A sugar factory in India is investigating the possibility of producing liquid glucose on a large scale.

Several items have been transferred recently from the imported to the indigenous list, making the latter for the first time greater than the former, the percentage on the drug list now being, indigenous items fifty-five, imported items forty-five.

Scabies and Its Treatment

Scabies in European countries under war conditions is likely to become common. Ferdinand Hebra, the great dermatologist of Vienna, had no doubt regarding the cause. He not only demonstrated constantly the presence of the spider-like acarine parasite, the Sarcoptes scabiei, but produced the disease experimentally by placing acari on the skin and observing the development of the lesions. The female Sarcoptes scabiei, usually termed the acarus, burrows and lays eggs in the burrow; the larvæ hatch out in three to three and a half days. The female acarus has favorite sites for burrowing, the genitals, the fronts of the wrists, the web and sides of the fingers, the ulnar border of the hand, the backs of the elbows, the anterior axillary folds, the nipples in women, the umbilicus, the sides of the gluteal cleft, the lower part of the buttocks, the front of the knees, the ankles and dorsum of the feet, and in infants the palms and soles are frequently affected.

The eruption of scabies is in two forms, the acarine burrows and the follicular papular eruptions. The burrows occupy the sites mentioned above, while the follicular papular eruption is arranged in smaller or larger circles around the areas where the burrows are and the general opinion adds weight to the view that the follicular lesions are due to acarine larvæ. Of course, it is a troublesome complaint and its common name, itch, is well deserved. The itching is intense and unless proper measures are taken the disease will spread and persist.

Although, perhaps, the source of the complaint is not dirt, in the prevention of scabies John Wesley's saying that cleanliness is next to godliness should be borne in mind and the precept practiced. In treating scabies most minute attention must be paid to carrying out in detail a routine laid down. The burrows should be opened by scrubbing, and a parasiticide applied to the body, while clothes and bedding should be disinfected thoroughly. The body should be soaked in

a quite hot bath, rubbed with soft soap, and then scrubbed with a brush, especially those areas where burrows occur. Then sulphur ointment may be rubbed in all over the body except the face and scalp. Two days later, the ointment is rubbed in again but no bath given; on the fourth day nothing is done and on the fifth day the patient has a bath and puts on clean clothes. Balsam of Peru ointment, twelve percent, and betanaphthol, five percent, may be used as an alternative to sulphur. During the last war more rough and ready methods were employed, but the principle was the same, to get rid of the offending cause completely, and to disinfect clothes and bedclothes.

Health in New Zealand

New Zealand, a lovely, picturesque and in every way an interesting country, is perhaps the most healthy of the British dominions. To judge by statistics, it is the most healthy but it must be borne in mind that it is sparsely populated, with a glorious climate, and poverty is almost unknown. Its population is 1,500,000 including 50,000 natives, and according to recent statistics, it has had the lowest death rate and the lowest infant mortality rate in the British Empire.

The Director General of Health reported that for 1939 the death rate, excluding the Maoris, was 9.20 per 1,000 inhabitants and the infant mortality rate 31.14 per 1,000 live births. The birth rate was 18.73 per 1,000 of population, but this may not actually mean that the rising tendency of the birth rate is the result largely of the increased marriage rate during recent years, and does not necessarily signify that married people are having larger families. There is an increasing percentage of first births to total births which may explain to some extent the increased birth rate. It seems that wherever people are prosperous the birth rate is low and that it is only the poor who have the temerity to have their quivers full.

Heart disease was the principal cause of death and cancer second. The number of deaths from puerperal sepsis has tended to rise during recent years and is coincident with the wide use of the sulfonamides. It is suggested that the rise in the death rate, in excess of that of the incidence rate may have been due to the wrongful use of these drugs, resulting in agranulocytosis.

An appendix to the report dealing with Maori diet is especially interesting and instructive. It is stressed that before the white men came to New Zealand, Maori diet was quite satisfactory. Proteins and fats were derived chiefly from fish, fowl, and "occasionally human flesh in time of war." With the coming of the white man European diet was introduced, and now fish is seldom caught, flesh foods are restricted, and potatoes, white flour and baker's bread, sugar, cereals, maize, pork and canned meats and fish are the staple foodstuffs. The white man has brought in his foodstuffs without teaching the natives how to use them properly. It might have been added that the white man introduced alcohol and some European vices and that the Maoris, instead of being free to range the country and to live unfettered, are now in the chains of civilization, and, as is the case always, has deteriorated. Also it must be borne in mind that the Maoris, as is the case with all natives, are peculiarly susceptible to the diseases of the white man, as they are in this respect virgin soil.

Therapeutic Action of Codliver Oil

Codliver oil is one of the most valuable agents used by the medical profession. With the recent growth in the knowledge of vitamins, some of the earlier observations with regard to codliver oil have been forgotten, and especially its protective and curative action in pulmonary diseases. Whether this action is due to the vitamins present in codliver oil is not known, but it is important that the proved therapeutic properties of this oil should not be ignored. Again, some of the virtues of codliver oil are due to the iodine it contains.

A. L. Banyai (*British Journal of Tuberculosis,* 1940) reported from the Muirdale Sanatorium, Wisconsin, good results from the local treatment of tuberculous lesions with codliver oil. Loch has used the oil locally in a large number of nontuberculous conditions. It was found to exert an inhibitory effect on the bacterial flora of wounds. Banyai obtained satisfactory results from the use of codliver oil and tomato juice in intestinal tuberculosis. This form of treatment was recommended by McConkey in 1930. Banyai suggested that these results might be owing to the direct contact of vitamin A with the ulcers or to its increase in the blood. He has treated tuberculous pharyngitis and laryngitis by spraying the throat three times daily with codliver oil by means of an ordinary atomizer. Active pulmonary tuberculosis was present in all the cases. On the whole, the results were favorable. In ninety-one cases, healing took place in twenty-five.

Tuberculous empyema in the absence of bronchopleural fistula also responded favorably to aspiration of the pus and replacement by codliver oil. Suppurating tuberculous glands, when seen early, healed well under repeated aspiration followed by the injection of codliver oil. Codliver oil drops induced more rapid recoveries in phlyctenular conjunctivitis and keratitis than other methods. Sinuses from tuberculous epididymitis healed promptly under codliver oil injections, and good results were obtained in lupus vulgaris and scrofuloderma.

Codliver oil is a constitutional and local remedy of great value, and its good therapeutic action has perhaps, not yet, been fully determined.

Papers and Addresses

MENTAL HYGIENE AND SOCIAL SECURITY*

IRA S. WILE
New York, N. Y.

Mental hygiene is concerned with a state of being that enables a person to function in a manner to promote and achieve his maximum potential happiness and satisfaction with the minimum of friction. Threats of war and war itself are natural barriers to the usual modes of finding these satisfactions. The greatest significance of a war situation lies in this threat to personality which makes it necessary to revalue one's asset worth and self-organization.

The community as a whole, or part of it, is subject to profound effects by reason of the many mandatory changes and dislocations which affect peoples, institutions, principles and ideas. Personal, familial and communal life are influenced by new anxieties which demand special caution in the process of reorganization of affairs. Hence there arises unusual worry about business failure, unemployment and loss of personal status. The social and industrial world undergoes a convulsion and individuals are shaken.

Changes in population stress, due to labor immigrations, motor camps and defense areas create a tremendous number of serious problems. These include the changing standards of sex relationships, the hasty marriages, with or without alcohol, the rise in the birth rate, the lack of responsibility evidenced in births out of wedlock and the rising venereal disease rate, as well as official attitudes toward prostitution. Whether these are considered cause or effect, they are related to mental hygiene and social security.

The essential problems with which I am concerned affect the civilian, rather than the official army. The focus of the problem is the war of nerves. Citizens are virtually belligerents if not actual combatants. War is no longer limited to the front line but makes targets of those who form the backbone of offense and defense. Acute problems grow out of this unwonted situation. The untrained, unmilitary public is faced with confusion, indecision and uncertain attitudes towards war. Induced fears, and even waves of slight panic result as weak-soul suggestibility conduces to the acceptance of implied threats, the dissemination of rumors, the unquestioning surrender to propaganda. Too many succumb to a clash between social opinion concerning how a person should act in the face of danger, and the instinctive reaction to self-preservation and the significance of personal life.

The more chronic phase of this personal-social status is bound up in the term *morale*. The establishment of confidence, balanced thinking and an understanding of the significance of current happenings, buttressed by a faith in one's leaders, institutions and principles, are basic stabilizers. The experience of other countries clearly indicates that neuroses of civilians are actually confined to those who were to some extent unstable before the beginning of the war. As has been said, "No breakdown has yet been seen in a civilian who was a well-adapted personality before the war." This means that war problems and those of peace cannot be dissociated from personalities conditioned toward inadequacy and uncertainty in self-direction.

Social morale is more than the sum of the morale of individuals. It possesses a value inherent in the totality of group living, wherein the individual identity loses conspicuous significance. At the same time social morale may be threatened by individual defections that destroy the sense of integrated solidarity.

Social morale must find expression in confident, reasoned enthusiasm. It does not thrive on complacency and smug assumption of superiority. There are future uncertainties which must be considered in the light of probabilities rather than in terms of remote possibilities. Morale is founded on realistic day-by-day living and is lowered by escapist thinking. The increasing regulation of personal life and the changing nature of acts of war have their effect upon personal thinking. But emotional thinking must not be a brake on group action against defeatism. War weariness and war apathy are harmful breeders of a pessimism that is contrary to social welfare. Morale is an active offensive against demoralization and is not merely a measure of defense.

Social security is a broad term. Its meaning for government is general; for various groups it is quite specific; for countless individuals, it is vague. What contributes to security is varied by reference to self-centered factors. Insecurity creates personal problems that demand adjustment. This is equally true during war and peace.

Mental hygiene, following the development of psychiatric problems, demands governmental consideration more actively during preparation for a draft of man power than during normal civilian activity. The time factor and the lack of psychiatrists create particular difficulties in the recognition of mental defectives, epileptics, neurotics, psychotics and psychopathic personalities, that the military and naval services may be kept free of them. But equally vital is the protection of rejected draftees, whether because of these mental states or because of homosexuality, conviction for a felony, doubt concerning citizenship or status as an alien. Self-rejection, frustration, exposure to unfriendly criticism or thoughtless condemnation are especially hazardous to sensitive persons whose patriotism is not in conflict with other self-interest.

The breakdowns in military service of those who

*Read before the Mental Hygiene Committee of the Brooklyn Council for Social Planning, February 3, 1942.

had and have the stability essential for civilian service call for early treatment but many will remain uncured despite our earnest efforts. Dislocation from the protective care of the home, assumption of unusual responsibility for others, and various anxieties concerning those left behind, with severe nostalgia, will leave scars upon personality, even as they will increase the need for hospitals for the mentally ill.

Another problem of social security and mental hygiene will result from the increased accident rate due to a rapid increase of industrial production and the lack of sufficient expert personnel for teaching and supervisory services. This causes new financial stresses and social burdens upon families and communities. Bodily injury is more than a matter of loss of wages, temporary unemployment or labor turnover, for it includes physical and mental hazards, possible unemployability and dependence, with lowered efficiency of the family unit.

Mental hygiene will be necessary because of the rapid turnover of untrained civilians to jobs desired by them despite their unfitness. Unfortunately many neurotics who really enjoy minding other people's affairs seek and find positions of responsibility, thus constituting an actual threat to communal security if their services should become necessary. This includes air raid wardens, first aiders, fire wardens and others who patriotically serve, despite constitutional unfitness. Many are not wholly able to care for themselves, much less to guide others. This, however, will be remedied when social planning is less impulsive and is better organized for a proper selection of volunteers for special services.

Many civilians will be disturbed by a marked change of economic status as some are already distressed at the thought of high taxes and the effect upon personal living. Others are troubled by necessitated familial reorganization, by a reduced level of housing, by the necessity of combining households with, and even of becoming dependent upon, unloved relatives. Still others are worried about foregoing customary foods and the inconvenience of rationing. The selfish hoarders threaten the social security of others as they fatten their asocial spirit on what they deem sharp foresight.

A considerable number are definitely jittery because they view their personal world as shaking and they live in constant dread of physical danger. They are most adaptable when no adaptation is required. Filled with a sense of fear and a sense of guilt for being so fearful they suffer anxiety and conflict that may be expressed in hysteria or other neurotic manifestation. They have difficulty in a sinking of their own personal identity and distress through a rational participation in mass living. People must belong to groups as well as to families so far as is possible. They should find active occupation and foster heartfelt enthusiasm for, and by, doing something with others subject to the same threats. This is the mental hygiene value of being an air raid warden, a fireman, an ambulance driver, a worker in defense industries or an active Red Cross worker. Work with others promotes a sense of social security, which, in turn, is reflected not merely in the wellbeing of those thus serving but in the areas they serve.

Social security is most important in its effects upon the family. Family worry varies with the degree of responsibility. The irresponsible incompetents suffer least in the presence of deprivation, sorrow, suffering. Well educated and highly imaginative parents, overmeticulous in their sense of parenthood, are most susceptible to ideas of insecurity. Their solicitous concern for their own children is tremendous and their anxiety is overexpanded by their own evaluation of familial status. Fortunately the experience of England has shown that children are less susceptible to disturbance by war than are adults. They make quicker adjustments to their temporarily shaken mental reactions to bombings, fires and loss of parents. Familial distresses naturally arise from the work migration of boys who had been direct contributors to the family purse and welfare, or who can make only small contributions because of joining the military forces. The fear of breaking up the family is demoralizing and profound effects are noted, especially when the father leaves home to work in another community or when the mother undertakes work not previously undertaken, notably when it involves long absence from home. These give rise to a number of significant behaviors on the part of children, including phobias, enuresis, disobedience and delinquency. These symptoms of the broken home are well recognized by all social workers. The home continues to demonstrate its protective worth to the mind, even though physical safety may require temporary evacuation of children.

The maintenance of a feeling of security involves cultural changes in attitude toward jobs and efforts and in ideas about life and death. The sense of security declines when people must react quickly to blackouts, alerts, air raids and fires, when they must continue at work and carry on with greater effort, though hell break loose. The challenge lies not in the presence of fear but in the capacity to control or conquer fear. This is the moral courage that bids man fight in the face of his desire to flee. Civilians cannot escape the struggle against fear, frustration, disappointment and self-rejection. Their problem is to win by strategy or frontal attack their own war for emotional balance.

Social security involves an increased program for personal fitness. The sound body may not assure, but it at least favors, a sound mind. The body politic must facilitate improved nutrition, thus raising the tonus of all citizens so that they can better meet the stresses and strains of daily life. This calls for the cultivation and distribution of essential food supplies with controlled reasonable prices for producers and consumers. There should be no ill-fed families in a land of fertility that has ploughed under food which could have raised their level of physical efficiency. Spending and saving, using less of consumer commodities and purchasing defense bonds provide opportunities for adapting one's ideas of personal needs to the nation as representative of self.

Another important element is the fostering of adequate rest. Loss of sleep and increasing fatigue are symptomatic of possible mental disturbance as well as extra strains which breed pessimism, hasten gloominess and promote anxiety, each of which lowers personal efficiency. Hours of labor and exposure to industrial poisons, as well as rates of pay and regularity of employment are factors in mental hygiene. The pressure of personal conflict, of fatigue, toxins, uncertainty, the fear of loss of home or a believed danger to life, leads many to take refuge in alcoholism or seek narcotic solace. Interrupted sleep and fatigue from noise, effort and

worry heighten antisocial activity and may increase the number of addicts who become public charges.

Social security programs affecting children involve whatever is necessary to make them feel secure and that they are wanted or needed for themselves. It is true that the adjustment of children today is less difficult because they grow up more rapidly through vicarious experiences and as a group are more easily liberated from family pressure. The movies, radio, books, motor cars, camps and schools facilitate the precocious experiences and viewpoints of individualistic self-direction, which weaken the bonds of family attachment. Our children suffer from their self-centered views but it is certain that indoctrination of real values will restore the cultural responsibility that recognizes the need to give to, as well as to receive from, society. Factually they need a home more than ever before—but a sympathetic, understanding, sponsoring home, rather than one tainted with emotional parasitism.

The breakdown of home life tends to increase delinquency. Too frequently families under tension evidence a disregard for rigid ethics while a war psychology lowers respect for property and life. Lacking familial patterns and sound directions, adolescents may act antisocially. Mental hygiene security involves the teaching of ethics and religion so both will function in the personality. Hence there is increased reason for the development of better habits and finer attitudes in childhood. This is essential in promoting the emotional stability that lessens the likelihood of antisocial activity, so frequently the indicator of psychological maladjustment. Setting up juvenile courts and probation do not provide the basic approach to the prevention of delinquency any more than sanitaria prevent neuroses. Society has not yet developed a full appreciation of the meaning of prevention and hence there is need for more careful social planning of family life and the education of the growing generation.

Social security of the mass is endangered by the lack of security of the few. The plight of minorities represents the arrogance and hypocrisy of those who profess to believe in democracy. Various minorities of color, creed, nationality and economic groupings are doubtful of their own status and worried over their future. They are the temporary victims of instigated hatreds, stupid intolerance and resultant injustice. They find themselves suspicious of their own associates, even as they struggle against friction with other groups which seek to dominate or destroy them. Some alien and refugee groups particularly are having intensified fears and dream of concentration camps and deportation. Many loyal and patriotic victims unconsciously transmit their anxiety to their children so that they also suffer from sleeplessness, increased tension, irritation, night terrors and day phobias. Security must be insured to those who, through no fault of their own, are denied citizenship, deprived of jobs, refused licenses for professional service, or are rejected for citizen service and even as blood donors. Their mental states affect the public safety and security.

Cultural security can grow only from diminished conflict within our population groups. The practices of democracy should not produce anxiety among citizens or potential citizens any more than they should permit a vain overconfidence to produce apathy, disillusionment and despair. The fear of fifth columnists, saboteurs and espionage leads to a greater suspicion of alien groups. These minority groups are subject to an increased mental hazard. Their difficulties are not due to their own constitutions but arise from cultural pressures and areas of neurotic aggression. If they did not possess a reasonably vigorous constitution and a high power of adaptability, the majority group would be weakened and the spirit of democracy would require a soul doctor.

Most significant among the problems of social security are those resultant from interactive community struggles. No good mental hygiene arises from the violation of treaties, the suppression of church activity and the disorganization of the home. The shrinkage of personal value against the background of heightened group significance agitates national principles, alters ideals and questions methods of government. These reactions call for readjustments. Thus primary effects and consequent adaptation modify the degree of social safety. The Office of Civilian Defense aims to prevent social apathy, to lessen internal conflict and tension and to offset prevailing insecurities. It should not destroy personal aggressiveness or interest, nor banish societal or individual initiative. It should organize and harmonize them for the public good, without reducing confidence through unmerited but political appointments.

Social security cannot be procured and maintained when civilian fears are fostered, hatreds are augmented and family life is disorganized. A patient public recognizes the occasion for sound thinking that clears the stage for rational action. Some restraint of personal freedom during war is natural and it will be accepted as a contribution to national strength. Problems of reaction to deprivation depend upon the degree to which war becomes a destructive reality. Too many are still unaware of the necessity of altering their plan of living in the interest of personal and social survival. Too many believe in their own augmented significance and regard it proper for them to live in ease in the face of dysgenic forces, regardless of what may happen to others. They menace themselves as well as others. They do not grasp the deeper values of mental hygiene.

Communal responsibility for group security is paramount. Both the sense of responsibility and of security are forces for stability. The State and its subdivisions must strengthen all the institutions now established to strengthen and aid individuals. The community effort to preserve democracy must not cancel the civil liberties which constitute its essence. Organized communities need to maintain the vital organizations which serve society, particularly those useful in preventing reactions of panic, under conditions of special stress. This means more unified social planning. There is need for more thoughtful attention concerning our schools, our housing and recreation facilities, our children in growth, our youth at work and our old folks at home.

Mental hygiene urges the organization of habits and routines, the development of sane attitudes and the formulation of orderly processes that will conduce to a sense of safety. Consciously directed efforts to meet specific situations lessen anxiety. It is as important to become accustomed to noises that terrify as to learn first aid to the physically injured. It is a wise policy to increase hospital resources for all the people, to develop first aid facilities, to promote assurance of protec-

tion against accidents, bombings, fire and their results. This requires communal reorganization in the rational method of lessening the tension that is bound to accompany a real emergency.

Social security requires the maintenance of broad programs for active recreation, for constructive adult education and for diversified entertainment, through music, art, dance and drama. Active and passive participations promote and advance cheerfulness which is one antidote of fear. Laughter and good humor cushion the shock of serious threats.

Philanthropy should be encouraged through an extension of all areas of aid. There is, and will be, a greater need for organized social and trained social service than we have ever known. There must be no relaxation of efforts to provide the things that war may require or daily living may involve. Better housing, improved nutrition, continuity of occupation, healthful hours of labor, reasonable standards of living, provision for unemployment and old age insurance constitute phases of a legitimate system of social guidance and protection, favoring national and personal stability.

These hygienic practices, fostering peace of mind and lessening the tensions of the struggle for survival, are not to be thought of as patronizing but as fraternizing. They do not represent totalitarianism, but the preservation of individualism. They do not express capitalism begrudgingly doling out social service but a socialized capitalism serving those who are in need because of a lack of capital.

We need to encourage a deeper comprehension of the nature and meaning of our laws, institutions and charters of freedom, as the basis of social effort to preserve and respect our laws and government. We should face economic nationalism and internationalism, Nazism, Fascism and Communism, and study them honestly. We may gather some ideas for the betterment of our patterns of living without sacrifice of our four freedoms. We should not be terrorized by the place of origin of ideas, by terminology, by propaganda or by conservative resistance to change. We too must contemplate probable changes, or possible social and economic changes, with courage and convictions, confidently attacking falsities, casting out phantasies and rejecting emotional wishful thinking.

This means more than ordinary efforts to maintain the touch and go of life. It is a challenge to live freely and honestly, and unafraid of changing concepts. It is imperative for mental hygiene that we endeavor to continue living in terms of our usual standards but with a desire to raise them for all people. Ideals should not be sacrified to the war god. The world may burn up materials, governments may seize property, but our ideology still contends for the rights of peoples and of individual citizens. This is opposed to the principle of totalitarianism and the enslavement of personality in the interest of an overlord state. Belief in man involves a belief in manliness offered with man power. Personal service with a group, for a group and by a group should operate in the broadest interests of every group, and the individuals composing it. In war, as in peace, this constitutes hygiene against anxiety and introverted isolation in the midst of antisocial forces.

We acknowledge a growing necessity for adaptability to change—change of physical condition, economic status, political principles; change of ideas and concepts in economics, sociology and government. The determined objective willingness to accept and to adjust to our lot, without frustration, is a prerequisite for personal stability. Emotional stability in the presence of personal hazards and social chaos depends upon firm but resilient foundations. The principles of mental hygiene are valuable in fixing the stabilizing centers of social values. The goal of mental health includes all that enhances the meaning of democracy. The word implies the power of the mass, which should be focused upon human welfare. The conscious promotion of power for the masses involves fitting them to use power wisely.

Citizens of a democracy must achieve a deeper consciousness of the external and internal factors that underlie their personal and group security. The rational organization of a planned society should enable man to find that richness of life which is founded upon the concept of livable brotherhood.

In the months of war to come and in the years of peace to follow it is the task of mental hygiene to teach men to live realistically, courageously, honestly and justly. Then will they live as free men, despite blood, and sweat and tears. Ever following the dictates of their warm hearts, they will destroy every dictatorship of cold, cruel, heartless enemies who have robbed the world of the blessings of peace.

264 WEST SEVENTY-THIRD STREET

A PLEA FOR EARLY SURGICAL TREATMENT OF DISEASES OF THE GALLBLADDER AND BILE DUCTS

HARRY PIKE
New York, N. Y.

Medical literature seems to abound with ever-increasing experience in gallbladder surgery, but there seems to be no unanimity of opinion as to the operative indications of diseased gallbladder and bile ducts. Some surgeons recommend immediate operation, others late operation, and still others are opposed to any operative intervention. It seems rather strange that we cannot establish a definite operative indication, as in appendicitis, in order that the practitioner may make a definite decision for or against operation.

The infection of the gallbladder may manifest itself in various ways. At operation all types of biliary conditions are seen, ranging from simple inflammation of the gallbladder, to the severest form of gangrene, perforation and peritonitis. Frequently the inflammation will extend to the large organs, such as the duodenum, pylorus, head of pancreas, and lymph spaces.

As the inflammation of the gallbladder increases, the pressure in the bladder becomes more severe and the gallbladder distends until it bursts. The great amount of pressure on its walls distends the bladder and this pressure is distributed equally on all sides. The neck of

the gallbladder distends until the impacted stones float up and allow the infected bile to flow into the cystic and common ducts.

If the calculus does not float up into the bladder, some of the calculi remaining in cystic and common ducts cause an infection of the duct and dilatation of it, with an infection of surrounding tissue which results in a dangerous condition for the patient.

The pathological condition of the common and cystic duct will invariably follow if the diseased gallbladder is not removed. The common duct infection is present only if the infected agent is not removed early; that infection is causative in gallbladder conditions needs no proof.

In the case of appendicitis, where inflammation spreads rapidly, the life of the individual is at stake. This has been recognized after many years of argument urging surgeons not to wait, but to operate immediately. Many medical men agree that some patients with gallbladder disease will recover without operation; some patients with acute appendicitis may also recover without operation. This does not prevent the surgeon from operating in order to avoid severe abdominal conditions. There is, I think, sufficient reason for instituting the same treatment for gallbladder diseases.

If we would treat gallbladder conditions the same as we do appendicitis, the mortality from gallbladder disease would be reduced and the same results as in appendicular conditions would probably be obtained.

The dangers of operating for acute cholecystitis, propounded by some men, have been greatly exaggerated. Such dangers are found to be no greater than when operating for acute appendicitis. Delay in operating may seriously endanger surrounding organs. The question as to the proper time to operate on a patient suffering from acute cholecystitis has been proved to be highly controversial.

Much has been written in favor of early versus delayed operation. Some men have agreed that operation should be undertaken before marked pericholecystitis and pericholedochal inflammatory action has occurred. When inflammation takes place, one has to deal with structures which are markedly friable and edematous, and under such circumstances there is a great possibility of injuring the extrahepatic bile ducts. Within the first few hours the patient may still be in good condition, but if operation is delayed the patient becomes dehydrated from prolonged vomiting.

In general, exploration within the first few hours after the onset of symptoms seems to have more advocates than does the plan that entails delay. Patients are seen not infrequently whose symptoms suggest minimum inflammation in the gallbladder on clinical examination, but who prove to have an acutely inflamed organ when operated upon. Similarly, it is not uncommon to see patients who present many characteristic signs and symptoms of acute cholecystitis, but in whom the evidence of acute inflammation is lacking. It is obvious, therefore, that one should determine from what evidence the diagnosis of acute cholecystitis has been made.

The successful diagnosis of diseases of the gallbladder and bile ducts depends for the most part upon well developed clinical acumen. Such a statement may seem too exacting now that we have at our command new and useful diagnostic measures, yet in the hands of experts such measures often fail to demonstrate the presence of gallbladder inflammation and cholelithiasis.

Diagnosis of Biliary Tract Disease

The first prerequisites of a correct diagnosis of diseases of the biliary tract are a well taken history and a careful physical examination. Laboratory procedures should be used to confirm the clinical impression and the data obtained should be correlated with the clinical findings, a careful history, and an accurate description of all phases of the picture of disease of the biliary tract.

Dyspepsia, if present, may be of the gallbladder variety, or the ulcerous type. Patients having the gallbladder type of dyspepsia complain of fullness after eating, and gastric distress, belching and bloating, which are sometimes unrelated to the intake of specific foods, but which are more severe after the intake of fat and coarse foods. The ulcerous types of dyspepsia generally possess many irregularities. It is important to inquire about the subjective symptoms of the dyspepsia which usually accompanies ulcers. These may indicate that biliary diseases and peptic ulcer coexist in the same patient. In such cases a thorough investigation should be carried out with the view of excluding peptic ulcer.

The extent and severity of pain should be noted. The awakening of the patient at night because of pain, the administration of narcotics for relief, inability of the patient to lie quietly in bed, during an attack, all these details tend to designate the organic character of the pain caused by functional disturbances. Physical examinations must be conducted under a good light, so that jaundice, if present, may be detected.

The location of tenderness, the presence of spasm of the rectus muscles, the size of the liver and the value of certain laboratory methods vary, depending upon whether or not jaundice is present. If jaundice is present and the gallbladder is found able to concentrate and evacuate dye, it may be accepted that there exists a pathological condition of the gallbladder of a mild degree. If jaundice is absent, cholecystography is the most reliable means of diagnosis. If the organ fills poorly with the dye, or not at all, a disturbance of the function of the liver is more likely. Cholecystography should be employed only in mild degrees of jaundice, and with great caution.

Acute Cholecystitis

Many pathological changes in the gallbladder, ranging from mild inflammation with edema to suppuration, necrosis, and gangrene, are included in cholecystitis. The clinical syndrome is variable; there is no correlation between the degree of pathological change, and the severity of the symptoms.

A mild attack of cholecystitis may manifest itself only by a slight tenderness in the right upper quadrant of the abdomen. A moderate attack may cause pain, nausea, vomiting, chills and fever. The pain is usually constant, is located in the right epigastric region, and extends to the right shoulder.

Physical examinations show spasm of the muscles, tenderness on pressure, the liver enlarged and its edge tender. The gallbladder may be palpable, and in some cases mild leucocytosis may be present. When suppura-

tion occurs, all symptoms, general and local, become very marked, and severe leucocytosis is greatly increased. The development of suppuration should be suspected only when the symptoms, general and local, become unmistakable, and severe leucocytosis is manifestly increased.

Perforation seldom produces a distinct picture, but should be suspected when symptoms persist for a long time, and when severe pain, tenderness, and leucocytosis persist and increase.

Associated pancreatitis should be suspected when pain is greatly increased and tenderness spreads to the left upper abdominal quadrant, and when the pain is not relieved with morphine. The appearance of jaundice indicates that there is present any one of the following: cholangitis, pancreatitis, or hepatitis.

In most cases the diagnosis of acute cholecystitis is a simple matter if the proper history is taken. The clinical picture is characterized by inflammation in the right upper quadrant of the abdomen. The physician must be interested in differential diagnosis rather than in the anatomical diagnosis.

A history of dyspepsia associated with gastric duodenal ulcers, board-like rigidity in muscles of abdomen, obliteration of hepatic dullness, an x ray demonstration of air in the peritoneal cavity, will indicate the presence of ruptured gastric ulcer. The shifting of pain, and tenderness in the left side will designate the presence of acute pancreatitis.

Appendicitis may be difficult to differentiate from acute cholecystitis. Acute coronary infection may be confused with acute cholecystitis, but a previous history of vice-like pain in the chest extending into the arms rather than into the back, with signs of cardiovascular changes and the presence of cardiac friction sounds, establishes a correct diagnosis.

Chronic Noncalculous Gallbladder Disease

In this category we include chronic catarrhal cholecystitis, strawberry gallbladder, and gallbladder stasis. Because chronic catarrhal cholecystitis is probably infectious, the occurrence of strawberry gallbladder is possibly a disturbance of cholesterol metabolism, while gallbladder stasis is of either myogenic or neurogenic origin. The pathological changes may vary from mild inflammation with fibrosis to extreme atrophy sclerosis. In spite of the wide diversity of pathological findings, the symptoms are so similar, and laboratory findings are so indefinite, that these three types can rarely be distinguished from one another. The dyspepsia may be typical of gallbladder disease, or may have certain ulcer-like characteristics.

The diagnosis in many instances can be made only after the exclusion of organic diseases in other organs. The dyspepsia of cholecystitis when it is similar to the dyspepsia associated with ulcer usually lacks some of the characteristic features of peptic ulcer. Examination may disclose the presence of a low acid content instead of a high, which is usually present in peptic lesions of the stomach and duodenum. An x ray will aid in visualizing a lesion of the duodenum or stomach. A urogram and urine analysis will exclude kidney disease, such as calculous hydronephrosis.

In differentiating cholecystitis from other conditions that may produce dyspepsia, it should be borne in mind that an enlarged spleen indicates such conditions as cirrhosis, Banti's disease, or biliary obstruction. There will be a history of a previous attack of appendicitis, rather than that of cholecystitis, if mucous colitis, or irritable bowel, is present. Rest, diet, and sedatives will aid in establishing a correct diagnosis.

The most difficult part lies in the recognition of mild degrees of inflammation of the gallbladder. In cases presenting chronic nervous exhaustion and the functional types of dyspepsia, a thorough examination should be made, and proper time should be given for the trial of a regimen of rest, diet, and sedatives. A cholecystogram study should be made.

Cholelithiasis

Patients suffering from cholelithiasis complain of pain which interferes with breathing, and inability to sit or lie quietly. The pain is usually paroxysmal in character, is situated in the epigastrium or right upper quadrant of the abdomen, and extends through and is referred to the right infrascapular region. Nausea and vomiting usually occur, as do also chills and fever.

The attacks are relieved by the administration of morphine or nitroglycerine. Usually there remains a soreness in the deep right upper quadrant of the abdomen, and the right portion of the epigastrium.

Certain variations in the clinical picture indicate significant complications. Pain, rigidity of the upper right rectus, tenderness in the region of the gallbladder, persistent chills and fever, indicate cholecystitis or impaction of a stone in the cystic duct. Persistence of pain, with associated symptoms of infection and severe rigidity, indicates a possible perforation, or gangrene.

Colic, referable to the presence of gallstones, often may be atypical in both situation and severity. In many cases gallstones may not produce severe colic, and the only symptoms present may be due to associated cholecystitis. In such cases the diagnosis of gallstones may be made on the findings of cholecystography, or upon the presence of pigments of bilirubin and crystals in the contents of the duodenum.

The colics of cholelithiasis may be simulated by penetrating peptic lesions, renal stones, hydronephrosis, as well as the crises of tabes, lead colic, and tumors of the spinal cord. There is always uncertainty as to the exact cause of abdominal pain. A critical analysis of the patient's history, cholecystography, intravenous urography, x ray of the gastric intestinal tract, and a careful neurological examination usually serve to avoid many mistakes in diagnosis.

Confusing chronic and acute appendicitis with chronic and acute cholecystitis, with calculus, may be difficult to avoid. Sometimes a difficult problem arises in differentiating pain caused by spasm in the biliary tract from that of organic heart disease.

Conclusion

1. Cholecystitis is a surgical condition.
2. Duct infection is a preventable condition in most cases if operated early.
3. Cholecystitis should be operated in acute stages.
4. Waiting for the condition to subside will cause a pathological condition in surrounding structures, and will endanger the patient's chances of recovery.
5. The gallbladder should be removed in all cases unless contraindicated.

1269 GRAND CONCOURSE

Symposium on Cardiology

MEDICAL RECORD

PUBLISHED TWICE A MONTH BY

THE MEDICAL JOURNAL AND RECORD PUBLISHING CO., INC.

WEDNESDAY, APRIL 1, 1942

HEART CONDITIONS IN INDUSTRIAL MEDICINE

LUCIEN STARK

Norfolk, Nebr.

In discussing this subject, it would be difficult for me to include many industries, as all of my industrial work has had to do with railroads. Therefore this discussion will be based upon my railway experience. I think, however, that much which applies to railways will also apply to nearly every other industry, so with such a premise we can begin our discussion.

Classification of Heart Conditions

Perhaps we should first make some sort of classification of heart diseases in industry, so that we shall have some basis for discussion. I think that we can best start by classifying heart conditions from the viewpoint of the age of the individual and can put them into three groups. The first group will consist of individuals up to twenty-five years of age, the second group will consist of those from twenty-five years of age up to fifty years of age, and the last group will consist of those from fifty years of age to retirement or to seventy-five years of age. In railway circles the age of retirement is sixty-five, so that this last group can go from sixty-five on as far as it is necessary for it to go.

The next classification will have to do with the origin of the cardiac or circulatory defect and it also can be put into three groups. The first group will consist of those defects produced by infections or infectious processes such as rheumatism, syphilis or other infectious processes affecting the heart muscle. The second group will consist of cardiac and circulatory defects brought about by endocrine disorders, and the third group will include the circulatory defects brought about by the degenerative lesions of hearts and blood vessels.

First Age Group

In our first age group, that is, those individuals up to twenty-five years of age, the principal cardiac defects are those that are rheumatic in origin. There will be an occasional syphilitic heart, and an occasional heart disabled by some endocrine upset, but the vast majority will be the result of a rheumatic carditis which has taken place at some time in the early life of the patient.

Persons of this age are apt to make their first appearance before the medical examiner when seeking employment. I believe that in most of the industrial plants at this time, the new employee has to undergo a rather rigid physical examination before he is employed, so that the rheumatic cases will be discovered before the man enters the industrial organization. The Wassermann test taken at the same time will eliminate the syphilitic heart. The same can be said of the occasional endocrine heart. I think the majority will agree with me that the greatest number of rheumatic hearts appear before the age of twenty-five years, so that if the prospective employee does not have a rheumatic heart when he appears for his first physical examination, his chance of acquiring one becomes greatly lessened with the passage of time.

There may be some endocrine upsets which would give us a cardiac disability in this group but they would be more apt to come with the succeeding age group. There may be the hyperthyroid or the hypothyroid individual in this group, either one of which could produce a disabling circulatory lesion. The fast pulse, tremor, and the other well known signs of a thyrotoxicosis would call attention to this possibility and, with the physical signs and the basal metabolic estimation, the problem of thyrotoxicosis would be solved and this disabling lesion could be cared for before the patient became an employee, or at least shortly after he became one, and the reason for his disability remedied so he could carry on. Hypothyroid individuals are usually easily distinguished and the basal rate will either confirm or refute the idea of hypothyroidism and these people can either not be employed or they can undergo treatment so that the amount of thyroid necessary to keep them at normal can be determined and thus their base requirement established. Addison's disease will practically never be found in this age group and can be disregarded.

In this group, you will occasionally find a hypertensive individual, and in most instances I believe it to be due to a more or less generalized arteriolar sclerosis. I have had fifteen of these cases in the past few years and have been able to obtain postmortems on ten of them. In all of these cases, the larger vessels seemed to be free from any noticeable amount of a sclerotic process, but the bulk of the pathology is

found in the small terminal arteriole. In the normal arteriole, the relationship of the wall of the arteriole to the lumen is as one to two. The vessel wall is one and the lumen two. Where this type of an arteriolar sclerosis takes place, I have seen that ratio reversed and in one instance show a ratio of five to one. The thickness of the vessel wall was five times greater than the lumen of the vessel and as the thickening process all came from the inside of the vessel wall, there was a minimal amount of blood circulating in the areas supplied by these vessels. These young people had to have a hypertension in order to live and one peculiarity about the pathological findings at postmortem was adrenal change: the ten cases that I have posted have all had hypertrophied adrenal glands.

I have found this arteriolar sclerosis in nearly all of the organs which we have obtained at postmortem in these ten cases. I was perhaps a bit careless in that the most of the work was done upon kidneys, but as we are all suspicious of kidneys when we encounter a hypertension, I may be pardoned. Macroscopically, these kidneys show very little. They are not the small, contracted kidneys that are usually found in arteriosclerotic hypertension, but appear quite normal. It is only when microscopic sections are made that the pathology is found. There is, as I have mentioned, a tremendous thickening of the wall of the arteriole with almost complete obliteration of the lumen. All these young people have a hypertrophied heart muscle, principally left ventricle, and the more of them that I encounter, the more I believe that many cases of hypertension in young people have this arteriolar sclerosis as a basis. In my own experience these cases have been demonstrable at twenty-five years of age and the patients have all died before they were thirty-five. Their hypertrophied heart and hypertension should disqualify them for employment but should this condition make itself manifest after entering employment, they must be carefully watched and at the first sign of failure of the cardiac muscle or of mild attacks of amnesia or other cerebral accidents, they should be taken out of service.

Second Age Group

In the next age group, those between the ages of twenty-five and fifty, the rheumatic heart is almost out of the picture, for if the individual developed a rheumatic heart while in the former age group, he would not appear, and assuming that he was born with a normal heart and had escaped a rheumatic carditis, and that his endocrine machinery was all right, there is probably syphilitic heart disease. Syphilis is the principal cause of cardiac disability in this group. We have found thyrotoxicoses developing in this group, and as these subjects approach fifty, Addison's disease may begin to appear, but the vast majority of cases are syphilitic in origin. Cardiac pathology may have existed before this age and its discovery may be made during this period but the development of a cardiac disability from causes originating between the ages of twenty-five and fifty is more apt to be syphilitic than anything else.

I should like to quote Dr. Robert S. Berghoff, of Loyola University, Chicago, who in making an address before the Association of Surgeons of the New York Central System, made the following statement: "At least four and a half percent of all male adults who reach the age of forty or over show definite evidence of cardiac syphilis. That is a big figure. Here is one more startling. At least fifty percent, every other individual, frankly syphilitic, either through a history of syphilis or through a positive Wassermann reaction, or through evidence of syphilis elsewhere in the body; every other individual, every other male adult past the age of forty, who is syphilitic, shows at autopsy clinical evidence of cardiac syphilis. So it is terrifically frequent and a most important type of heart disease that has not been fully appreciated up to this time".

Probably the first signs of syphilitic heart disease are dyspnea, pain and cough. This is due to the fact that nearly always the aorta is attacked long before the organism invades the heart muscle itself. It does not attack the valves but does attack the medial layer containing both muscle and elastic tissue, destroys that layer, and we then have a syphilitic aortitis which is diffuse and involves the aorta its entire length and breadth. This permits a dilatation and a widening of the aorta, and it is not unusual to see an aorta more than five centimeters wide where a normal one would be three and a half or at the most four centimeters wide. It is this aortitis which causes the pain in the chest, substernal in character, always in the same place and brought on by physical effort or mental excitement. So then, in the case of a man in the second age group, who has pain brought about under the circumstances and conditions described above, a cough and dyspnea with a systolic murmur not due to an aortic stenosis, but due to the column of blood having too wide an aorta, the prospect of finding syphilitic heart disease is, indeed, very good. Laboratory procedures will clear up the diagnosis and you will then know with what you have to deal.

Incidentally, the prognosis in syphilitic heart disease is bad and a person having this disease should not be employed in industry, and if he has contracted the disease after becoming an employee, he should be removed from service at the first sign of an aortic insufficiency. That goes regardless of the amount of treatment taken by the individual and also regardless of the Wassermann reaction. Again I repeat, the prognosis of syphilitic heart disease is bad and when there are signs of aortic insufficiency, aneurysm, or coronary occlusion due to syphilis, there is nothing that we can do about it. As a measure of protection to the man himself, his fellow workers, the general public, and the railroad company, we should see him frequently and when any of the above named conditions make an appearance, remove the patient from service at that instant.

In this same age group, one finds the majority of the endocrine upsets which bring about damaged hearts. The most notable is, of course, a toxic thyroid. Paroxysmal tachycardia is, many times, the first sign of a thyrotoxicosis. Its presence should lead one to look for additional signs of this condition. Many of these cases have been treated with digitalis, acetylcholine, etc., while the thyroid condition has been entirely overlooked. An adenoma that is causing trouble is more apt to produce attacks of auricular fibrillation, while in a true toxic thyroid, the rapid pulse and the tremor are more apt to be the outstanding features. As a rule these cases are seen and diagnosed too late for operative intervention to be of great help in the employment

of men in industry. They have left their imprint on the heart muscle and those of us who have had to care for many of the socalled thyroid hearts, know that thyroid removal is now on the way out as a therapeutic measure in decompensated hearts due to this type of thyroid disease.

The other extreme in thyroid disease also has its effect on the cardiovascular system. Myxedema and even lesser degrees of hypothyroidism are often charged with producing a "myxedema heart". We find the slow pulse rate, cyanosis, some edema, râles at the base of the lungs, enlargement of the liver and all of the things that go with a dilatation. These people are at the mercy of thyroid extract. The dosage in these cases must be carefully worked out so that the base line of each can be discovered and this dose maintained. But even then they are not always good employees, and as I said before, are at the mercy of thyroid extract, and should be removed from service.

It is also in this age group that cases of Addison's disease are most apt to put in their initial appearance. The low blood pressure and its tendency to fall in changing position, a regularly dropped beat, epigastric fullness and nausea without vomiting, extreme sensitiveness to cold, effort dyspnea and loss of weight, should cause us at least to become suspicious that Addison's disease is on the way.

The presence of an adrenal tumor with its continuously rising blood pressure and carrying all the other signs of a hyperadrenalism will cause but little trouble as these people do not live long enough to be a burden to industry. An excellent article by Dr. James A. Hutton, of Chicago, on the endocrines in heart disease may be found in the *Journal of Industrial Medicine*, March, 1940, and it is well worth one's time to read and digest it.

It is also in this age group that we encounter the cases of arteriolar sclerosis mentioned earlier. It is in this period that these patients die. However, these cases may start in this age group or in the first age group and, up to the present, there is little if anything that we can do about it. They follow the course of a hypertensive heart disease and finally, the patients pass out with congestive heart failure if they have been able to avoid a cerebral or a coronary accident. These patients, when once the true character of the disease is determined, should be removed from any type of service where they might injure themselves or anyone else by reason of having either a cerebral or a coronary accident.

Third Age Group

We now come to what I believe to be the most important age group in the whole category of heart and circulatory disorders and the one which gives us the most trouble. This is the age group from fifty years of age to retirement, which in railway employees is sixty-five years. It is in this group that we find the degenerative lesions, and how to classify them in relation to their respective places in industry is at once our headache and our big problem. I think that we are safe in putting the people in this age group, who have cardiovascular symptoms, into two general classes, one class which has to do with the nutrient vessels, the coronary vessels, and the other with an exhausted heart muscle. We can then say that one class is myocardial and the other is arterial.

The myocardial class is merely the picture of a heart muscle that is wearing out. These people present shortness of breath, some dyspnea, and a substernal pain on exertion. Their vessels are usually sclerotic, not necessarily to any marked degree but, nevertheless, sclerotic. They become forgetful, usually complain of some dizziness under stress, blurred vision, drowsiness, and may have some mental changes. Much can be done for these people. They can be given a six months' leave of absence, given physical and mental rest and enough digitalis to help restore the nutrition of the heart muscle. They again become alert, lose many of the symptoms of which they complained, and again become useful. They cannot, however, be restored while working and all of the things above mentioned must be carried out.

These men may have to make some change in their occupation if their former one is too strenuous. But, if you stop and think that it cost their employer all the way from ten to twenty thousand dollars to get them to the point where they are useful members of that particular industrial organization, then it is well worth the effort from the viewpoint of both the employer and the employee. To permit an engineer to run a train on a busy division with one of these "tired-out hearts" is all wrong, though he might well be able to handle a train on some branch line where the work is not strenuous and train orders are an event. In that way he could release a man who could be used in mainline service and save not only himself but the company for which he works.

On the arterial side, we have two subdivisions. One we can label coronary insufficiency or coronary spasm, and the other the acute type of coronary occlusion or thrombosis. The cases of the narrowing of the coronary vessels by proliferative process in the intima, are those in which either an arteriosclerosis or an arteriolar sclerosis are the causative factor. Cases which have vessels that are stiff due to an arteriosclerosis, or have an extremely narrowed lumen due to an arteriolar sclerosis, constitute the first subdivision. In this first group are those people who, after effort or emotional upsets, have a sudden attack of pain, which radiates into one or both arms or into the neck, or, if they have no pain, have the sensation of being choked. These people frequently have these attacks and get well of their own accord by sitting or lying down. They are more quickly relieved if access can be had to nitroglycerine or some other coronary dilator, and as soon as the acute attack is over, they go on their way with nothing to remind them that they ever did have an attack.

Generally speaking, these people are the patients where the relationship of the vessel wall to the lumen of the vessel has been changed and the calibre of the vessel is not great enough to permit an adequate blood supply to pass through the vessel. These men are unsafe on engines or as brakemen or switchmen. Conductors can work with this type of arterial disease, as they are just as apt to have an attack in their own yard at home as they are when riding their train. I have at this time an excellent conductor who has gone through two episodes of this type and is still running his train. I saw him in both attacks. One occurred after he had gone to bed and the other while reading in his own front yard. This man has two excellent brakemen, has a through freight run with but two stops from one end of his run

to the other, and I, personally, feel that he is as well off on that run as he would be if he were out of service and working around his home.

The second type is a different story, that is, the man with acute coronary thrombosis. These attacks, as you all know, come on at any time. There has been quite an effort made to show that they all follow some extra exertion or emotional upset and that they are the result of effort in industry. I am afraid that the legal profession would love to find some basis for such an opinion. From my own experience, I like to follow the figures of Master, Dack and Jaffe of Mount Sinai Hospital, in New York. Their figures, published in 1939, show that in 973 attacks of coronary thrombosis, 208 or 22.3 percent occurred while the patient was asleep; 286 or 30.7 percent while the patient was sitting or lying down; 190 or 20.4 percent while the patient was indulging in some ordinary, mild activity. Moderate activity showed in 84 or 9.0 percent, walking in 146 or 15.6 percent, unusual or severe exertion in 19 or 2.0 percent. Forty of these attacks had an undetermined origin as to what the patient was doing at the time of occurrence of the attack.

To take these two groups together, we can say that the first group has nothing permanent left behind in the shape of actual demonstrable pathology. The individual has had his attack, spasmodic in character, the spasm is gone and to all intents and purposes, he is as well as he ever was. We cannot say this for the second group. Here we have had a myocardial infarction. The individual is in shock. He has all that goes with shock, and everyone around him, including himself and probably yourself, think that he is going to die. If he does not, what takes place? Within twenty-four hours he is running a temperature, has quite an increase in the white blood cell count, an area of pericarditis, and his electrocardiogram shows the actual picture of an injured heart muscle.

These two conditions must be differentiated. The first individual, the one who had the spasm, has had no actual pathology brought about within his myocardium. Anything that will keep his coronary vessels dilated and keep them from having a spasm can be used in the treatment of this man and he can continue in his work. He should have a lighter load to carry, a little more rest and he can carry on. But what of the other type? He has had an actual muscle injury. We do not always know the extent of the infarct in this heart muscle with this particular attack. We do know that there will be actual degeneration of that part of the muscle beyond the point of the actual block and that that part of the muscle will have to go through the regular processes of degeneration, absorption and rehabilitation and then be left with a scar. It is amazing how many of these insults can be assimilated by the heart muscle and still not produce death. I did a postmortem on a man of about sixty-eight years, who was an inmate of the Norfolk State Hospital and had been for many years. He died from pneumonia but when we removed his heart, he had five very definite scarred areas scattered over his heart muscle where he had had infarcts into the muscle. As he was a mental case and never complained, no one knew when these attacks took place but he had had them and had recovered each time.

These people with infarctions need to be put to bed and kept there until reconstruction of the anoxemic area is complete and the scar is firm enough for the individual to carry on. This may be two months or it may be six, but stay there he must, and it is just as well if you make no attempt to determine his cardiac reserve until his leucocyte count is normal and his polymorphonuclear count is below seventy percent. These people, after they have completely recovered from the attack, will want to return to work and I feel that a pretty good survey of their job should be made by the examiner before they are permitted to return. If their job is such that it would make them dangerous to themselves, their fellow employees or the general public, they should either change occupations or not be permitted to return to their former job. You could never feel safe in permitting an engineer to go out with a train after he had had one of these attacks.

The next class in this age group are those with hypertensive heart disease. These are the people who have had hypertension, regardless of its cause, over a considerable period of time. They have large hearts which come about from both an hypertrophy and a dilatation. When the hypertension first started, the patient had a dilatation which brought about a permanent lengthening of the muscle fibres and which at that time decreased the heart's capacity for work as these fibres were extended to, at that time, their greatest length. With them extended, the heart muscle began to hypertrophy, which increased the reserve power of the heart muscle and with it came the power and ability to maintain the circulation in a hypertension. Because of the demands on the heart muscle, the heart continues to hypertrophy until it eventually reaches the point where the fibres can no longer extend themselves and dilatation begins. They are like a rubber band that has been stretched to its limit for a long time. The fibres can go no further.

Here is the point where we begin to have congestive heart failure and once it begins, the individual should be taken out of service more for his own good than for the railway employing him. There is not a great deal that one can do for him except to provide him with complete mental and physical rest, a high carbohydrate diet and coronary dilators. Personally, I like to use coronary dilators for a time, forty-eight to seventy-two hours, and then use glucose and insulin intravenously so that he will have a greater amount of glycogen for the nutrition of his heart muscle. In general, we can say that congestive heart failure is but the natural outgrowth of hypertensive heart disease. It places a heavy load upon the left ventricle which is bound to affect the entire vascular system. The high diastolic pressure developed constitutes an invitation to coronary heart disease and we must remember the factors which tend to bring it about. The coronary vessels fill during diastole so that a high diastolic pressure must be guarded against. Previous attacks of coronary infarcts force the blood through scar tissue or any other mechanical obstruction in the coronary circulation. The decrease in the calibre of the coronary vessels can be included under the head of mechanical obstructions. When we have coronary disease, with anoxemia taking place, the degree and rapidity of failure will depend largely on how intelligently we handle the condition until the spasm has passed or scarring is complete.

I am not going into the discussion of responsibility for deaths from cardiac conditions as between the em-

ployer and employees as courts in many states have taken diametrically opposite positions. I do not think that it would be good judgment to go into the reasons for the development of both arteriosclerosis and arteriolar sclerosis as it is too much of a controversial subject, but I do think that more and more medical men are coming over to the theory of high blood cholesterols being a producer of the narrowing of the lumen in the blood vessels, thus inviting a sclerosis to take place.

To sum it up then, I would like to say that in industry, we can classify our employees into age groups, and again classify them into groups having demonstrable causes for their cardiac defects in those age groups. By so doing, we can, perhaps, better determine what we can do and what we cannot do for those individuals in industry who are so unfortunate as to acquire some cardiovascular lesion.

1063 Fourth Street

QUINIDINE IN AURICULAR FLUTTER

GEORGE SCHWARTZ, GEORGE METZ and BERNARD TAYLOR
New York, N. Y.

During the course of the last decade and a half, there has been a decided swing of the pendulum in the utilization of quinidine sulphate in the arrhythmias, notably that of auricular flutter. Some fourteen years ago the use of quinidine sulphate in auricular flutter was held in some disrepute. Gradually the drug became mentioned more favorably until, at the present time, it occupies a position more or less secondary to digitalis; even those who do utilize quinidine, advocate it in minimal doses. This paper involves a brief summary of some of the contributions of various writers during this period in respect to quinidine therapy in auricular flutter, and further, is the occasion for a plea for the more liberal and more frequent utilization of this remarkable drug. It is our belief that too serious a viewpoint has been traditionally given us through the years as regards the frequency and severity of quinidine toxemia in all of its manifestations, and it is further our belief that minimal dosages have been advocated although ineffectual.

Review of the Literature

Bourne, in 1938 (1), reported a single case of auricular flutter where enormous doses of quinidine were required to restore the normal rhythm. Digitalis was first administered for a period of six weeks, then quinidine was given until toxic manifestations appeared after five hundred grains were administered; then quinidine and digitalis combined and finally quinidine alone were given in moderate doses until finally normal rhythm was re-established.

Wolfe White, in 1929 (2), found digitalis of more value than quinidine in auricular flutter.

Wedd, in 1929 (3), reported four cases of auricular flutter treated with quinidine by mouth with one successful result. In two other cases it was questioned whether the quinidine played any rôle in the result. This author cited the nine cases of Singer and Wintenberg, with success in six after the intravenous use of quinidine.

Padilla and Cossio, in 1930 (4), advised the use of intravenous quinidine in controlling attacks of auricular flutter, the patient being recumbent and quiet during the administration of the drug. After normal rhythm was restored, quinidine was given by mouth to prevent a recurrence.

Stroud, in 1933 (5), stated that quinidine had not fulfilled its early promise of becoming one of the more important drugs in the treatment of cardiovascular diseases. It occasionally produced emboli with hemiplegia or pulmonary infarcts and sometimes was the cause of sudden death. Further he stated that if, after digitalization, auricular flutter reverted to fibrillation, a final reversion to normal sinus rhythm might have been hastened by quinidine therapy.

Tung Chen-Lang, in 1933 (6), advised the simultaneous usage of both digitalis and quinidine in the treatment of auricular flutter and reported one successful case.

Gold, Otto and Satchwell, in 1933 (7), reported that they did not find the satisfactory results obtained by other workers in the use of quinidine.

Lewis, in 1933 (8), stated that quinidine had also been employed in flutter, as in fibrillation, to restore normal sinus rhythm, the method used being that described under fibrillation; the remedy, however, enjoyed no great success.

White, in 1934 (9), stated that it was wiser to use digitalis than any other drug in the treatment of established auricular flutter; though he stated that quinidine sulphate, in small doses, could be administered for the purpose of restoring normal rhythm at the onset of auricular fibrillation, into which the flutter has become converted, whether or not there is a slowing of the heart rate by digitalis. He further stated that probably the best course to pursue is first to digitalize the patient with auricular flutter, and then if normal rhythm is not restored, to try a course of quinidine sulphate.

Cowan and Ritchie, in 1935 (10), presented results obtained in twenty-two cases of auricular flutter. In four, the paroxysm ended spontaneously, four cases were quinidine-proof, and in only three of the remaining cases was quinidine utilized to convert the rhythm; in the remaining cases digitalis and strophanthin were utilized.

Jourdonais and Mosenthal, in 1935 (11), described the effects of quinidine in a sixty-six year old male showing auricular flutter and complete auriculoventricular block.

Harrison, in 1935 (12), stated that in patients with auricular flutter, it is usually wise to administer digitalis after fibrillation is instituted. However, if marked slowing of the heart does not occur, and particularly if pulse deficit is present, quinidine should be administered and the normal mechanism restored.

Beaumont, in 1937 (13), suggested a test dose of three grains of quinidine, and if no toxic symptoms

appeared, such as sweating, nausea, vomiting, diarrhea, abdominal pain, scarlatiniform rash, or severe headaches, the administration could be proceeded with on the next day, six grains of quinidine being given every three hours for four doses (total twenty-four grains) and the next day six grains of quinidine every three hours for five doses (total thirty grains). This should be continued for four days and, if a regular rhythm was not restored at the end of the week on this dosage, the quinidine would probably have had no effect and should be stopped.

Fishberg, in 1937 (14), stated that digitalis was more often efficacious than quinidine and should be tried first; both, however, were initiated with about 0.6 grams daily in divided doses, and this amount subsequently diminished. He claimed that the intravenous injection of quinidine sulphate might be tried if digitalis failed, but that this was risky.

Price, in 1937 (15), suggested a single dose of five grains or two doses of three grains at intervals of two hours to test for possible idiosyncrasy. Thereupon he commenced with five grains, three times daily, and the total dosage was gradually increased up to thirty grains which might be continued until normal rhythm was restored, or until symptoms of intolerance appeared. He further stated that the use of quinidine was rarely successful if more than thirty grains per diem were required.

Kerr, in 1939 (16), stated that he had obtained the best results by usually giving three to six grains at frequent intervals, giving it once every three to four hours throughout the day and night. He further stated that if results were not obtained, the size of the dose might be increased.

Scherf and Boyd, in 1939 (17), declared that there were two methods of procedure; quinidine therapy or massive doses of digitalis; in the former they suggested similar dosages as in the digitalization for the management of auricular fibrillation.

White, in 1939 (18), stated that auricular flutter is more amenable to digitalis therapy than quinidine therapy; and that it is wiser to use digitalis than any other drug in the treatment of established flutter. In about half the cases digitalis is effective and only partially so in the others. If a normal sinus rhythm is not established, a course of quinidine sulphate is advocated. Maintenance doses likewise are suggested, three grains of quinidine being given three times daily or digitalis one and one-half grains daily.

Cecil, in 1940 (19), stated that the action of quinidine in auricular flutter was similar to that in fibrillation, and that the drug had sometimes been used successfully to restore normal sinus rhythm.

Cecil, in 1940 (20), suggested a dosage of six grains four times during the day and once at night with a maximum of twelve grains five times a day if sinus rhythm was not obtained. This procedure was to be discontinued after three days.

Levine, in 1940 (21), suggested the use of quinidine in restoring a normal rhythm in auricular flutter in a dosage of five to ten grains three to four times a day. He occasionally augmented this procedure by the administration of 0.1 gram dosage of digitalis daily. At times, Levine wrote, "I had to increase the single dose of quinidine to 1.0 or even to 1.5 to 2.0 grams before reversion to normal sinus rhythm was obtained". Levine claimed that the disadvantages of quinidine apart from its frequent ineffectiveness were that it had certain toxic actions that were occasionally serious.

Levy, in 1940 (22), stated as did many others, that digitalis was the drug of choice. If, in spite of apparent digitalis action, the mechanism of flutter still persisted, quinidine might be tried. The plan of dosage of quinidine was the same as that given for fibrillation. But, if the foxglove had failed, quinidine was rarely effective. He further stated that should flutter be converted into fibrillation and the latter continued, quinidine might be expected to restore normal sinus rhythm.

Stroud, in 1940 (23), stated that as to the effects of drugs in auricular flutter, digitalis had apparently been the drug of choice; for it first produced an increase in the grade of A-V block, then converted the flutter to auricular fibrillation. If digitalis was then stopped, the auricular fibrillation frequently reverted spontaneously to normal rhythm. If this did not occur, the fibrillation might then have persisted, unless quinidine was given to establish normal rhythm. Quinidine sulphate, if effectual, converted the flutter to normal rhythm without the intervening stage of auricular fibrillation.

Leaman, in 1940, advised that the administration of digitalis usually abolished auricular flutter, converting it into auricular fibrillation. If no restoration of sinus rhythm occurred within one week in patients who showed no signs of mitral disease or auricular enlargement, quinidine might be considered. He advised a preliminary test dose of three grains, then five grains four times daily; and if within three days no effect was established, the dose was then increased every two days until a total of forty grains a day was reached. He advised larger doses in extreme emergencies only, but stated that it was wise not to exceed thirty to forty grains daily. He advised a maintenance dose of five grains three times daily.

Reed, in 1940 (25), stated that quinidine sulphate was given orally in three grain doses every hour until normal rhythm occurs or toxic symptoms appear. The total dosage should probably not exceed forty grains in twenty-four hours.

Schwartz, Taylor and Metz, in 1941 (26), reported a similar case as did Jourdonais and Mosenthal, in which, however, digitalis was utilized with excellent results. The question of the complete auriculoventricular block determined the use of digitalis.

Fishberg, in 1937 (27), stated that quinidine sulphate slowed the circus movement and the auricular rate presumably through retarding the conduction within the auricular musculature and increasing the refractory period; thus the flutter was abolished with a consequent return of the normal sinus rhythm. As a result of the depression of the vagal tone by the quinidine, the ventricle may have been accelerated and might even respond to each auricular contraction when the rate of the auricle is slowed. Acceleration of the ventricular rate was thus a stage in the quinidine treatment of flutter.

Although we have utilized massive dosages of quinidine and reported our results in other arrhythmias, we will summarize two cases of auricular flutter in which digitalis proved ineffectual and, when quinidine was administered in massive doses, a resultant return to a regular sinus rhythm occurred without the attendant fearful toxic manifestations.

Case Reports

A physician hospitalized a patient of his, an elderly white male, seventy years of age, in the Downtown Hospital and Pan-American clinic. The chief complaint consisted of gradually progressive dyspnea of a few months' duration. Three days prior to admission the dyspnea became markedly severe, so that comfort was only obtained in the sitting position both day and night. There was loss of appetite and a continual coughing which was nonproductive.

A physical examination performed by both the intern and the family physician disclosed a severely orthopneic, cyanotic individual whose dyspnea was the most distressing feature. Moist râles were present throughout the bases of the lungs and harsh rhonchi were audible over the entire thorax. There was no ankle or sacral edema. The apex was palpated in the sixth interspace at the anterior axillary line and the rate of both apex and radial vessels was elicited at 124 per minute. It was stated that the rhythm was "moderately irregular".

A diagnosis of auricular fibrillation was made purely from a clinical viewpoint, and, aside from usual hygienic and dietetic approach, the therapy employed was digitalis in one and one-half grain tablets, three times daily. The pulse apparently became "more regular" though the rate remained at 120 per minute, and there was no subjective or objective improvement within a six day period of this regime.

After the sixth day of hospitalization our service was asked for a consultation. Our physical and electrocardiographic examination revealed that the patient was suffering from another form of arrhythmia, namely, auricular flutter. Since, from a clinical viewpoint, we were assured that there had been no improvement in any fashion, all medication was discontinued for a period of twenty-four hours.

In the evening of the next day, a test dose of a three grain capsule of quinidine was given, and, when no evidence of idiosyncrasy to the drug was noted, thirty-six grains of quinidine were administered within a five hour period. The apical and radial pulse rate slowed to 70 per minute with what appeared to be an occasional premature contraction. The therapy was continued thereafter at a dosage of six grains every four hours but on the following morning the rate again was elicited above 120 and the rhythm was regular. Thereupon the dosage was increased and the patient was given sixty-six grains of quinidine on the second day. On the third day 108 grains were administered, on the fourth day 96 grains, and on the morning of the fifth day of quinidine therapy, a severe attack of syncope occurred. The pulse rate became markedly diminished at forty per minute and was regular in rhythm. Following the syncope, the pulse rate and apical rate speeded up towards 100. On the sixth day the apical and pulse rates were both elicited at 80 and the rhythm was regular. An electrocardiogram taken at this time disclosed a normal sinus rhythm which maintained itself throughout his stay at the hospital and several weeks after hospitalization without further medication. Maintenance dosages were not given, purely to establish an answer to a theory that perhaps maintenance dosages are unnecessary. Further cases will be employed to answer this question.

The second case is one in which a fifty-nine year old white male entered our service at the Downtown Hospital and Pan-American clinic complaining of shortness of breath of but a few hours' duration. There was a history of hypertension of several years' standing and the consequent failure manifested itself in an increasing edema of the ankles, sacrum, and of the liver. There was progressive dyspnea for the past two years, and this became so aggravated as to manifest itself in rusty frothy sputum at the hospital. He had been on digitalis and supportative therapy for the past two years.

One hour before admission into our institution the patient was seized with severe palpitation, marked dyspnea and precordial discomfort, necessitating hospitalization by means of an ambulance.

Physical examination revealed an obese individual suffering from severe dyspnea, cyanosis, extensive moist râles in both lung fields, a liver which was enlarged to two fingers width below the costal margin and marked ankle, leg, thigh and sacral edema. The arterial tension was elicited at 140 mm of Hg systolic and 100 mm of Hg diastolic, the rate at both the apex and radial vessels was about 150, and at this rate no valvular pathology was audible. The heart percussed into the left axillary line. An electrocardiogram disclosed auricular flutter with a 2:1 block.

The patient was placed upon an absolute Karrel diet and given the massive dose of twenty-four grains of digitalis intramuscularly during the first twenty-four hours, in equally spaced divided doses. The second day of admission the flutter changed to fibrillation, a rate of approximately 100 to 110, and the therapy was discontinued, because of the belief that a normal sinus rhythm would soon intervene. On the third day of admission there was a return of the flutter rhythm. During the interim all the signs of the congestive failure had cleared, perhaps because of the digitalis therapy or perhaps because of the severe limitation of fluids as restricted in the Karrel diet.

On the fifth day of admission (no digitalis had been administered for seventy-two hours) a test dose of quinidine sulphate was given consisting of three grains orally. No idiosyncrasy was noted and the patient was given fifteen grains orally followed in three hours with a similar dose. Before the third dose was to be administered, a return to a regular rhythm was noted, and an electrocardiogram taken at this time confirmed the suspicion that a return to a normal sinus rhythm had occurred. The patient was then placed upon a maintenance dosage of seven and one-half grains, three times a day, for several days and discharged to the care of his own family physician. Several weeks later the physician informed us that he was still administering quinidine at our suggestion, but in smaller dosages, i.e., three grains three times a day.

Here then are presented two cases, one in which small and the other in which large doses of digitalis in cases of auricular flutter proved ineffectual, yet after a short period of time in which the body amply disposed of the digitalis within it, rather large doses of quinidine caused a reversion to a normal sinus rhythm. In these and other cases published by various authors and ourselves, there were none of the severe attendant dangers, as irksome nausea, vomiting, diarrhea or other serious sequelæ to which the literature alludes and to which we were cautioned gravely by other investigators. In one case published by us (26), over six hundred

grains of quinidine were administered in less than five days; in one of the foregoing cases three hundred and nine grains were administered in less than three and one-half days and in the other thirty-three grains in approximately five hours. All of these patients are alive and doing exceedingly well months after hospitalization.

Summary and Conclusion

1. The literature has been reviewed to elicit the thoughts of various investigators on the subject of quinidine therapy in established auricular flutter in the nonmitralized heart.

2. Divergent views have been expressed, but the tendency appears to place quinidine in a more favorable light in recent years.

3. Hesitancy in its usage is expressed because of many supposed attendant dangers.

4. These two cases and others seem to place a more optimistic view upon these socalled attendant dangers.

5. Small doses, ineffectual within a few hours, increased to massive doses, appear as a possible solution to reversion of the rhythm of auricular flutter to a regular sinus rhythm.

A plea is made for further investigation by others in the utilization of a drug which we believe is attendant with no more gravity than many other drugs in our armamentarium. Massive dosages of quinidine, as described, certainly have produced excellent results for the patient. A heart in flutter for a week or more may easily fail while an ineffectual drug is utilized. Quinidine in massive doses appears to be most effectual in this type of arrhythmia. The plea for its early utilization is reiterated.

Bibliography

1. BOURNE, C. R.: *Canad. M. A. J.*, 19:180 (Aug.) 1928.
2. WOLF, L., and WHITE, P. D.: *Arch. Int. Med.*, 43:653 (May) 1929.
3. WEDD, A. M.: *Medical and surgical year book*, Physicians Hospital, Plattsburgh, 1:163, 1929.
4. PADILLA, T., and COSSIO: *M.J.*, 47:973 (Oct.) 1933.
5. STROUD, WILLIAM D.: *Modern concepts of cardiovascular disease*, 11:6, Philadelphia, 1933.
6. TUNG, CHEN-LANG: *Chinese M. J.*, 47:973 (Oct.) 1933.
7. GOLD, H., OTTO, H. L., and SATCHWELL, H.: *Am. Heart J.*, 9:219 (Dec.) 1933.
8. LEWIS, SIR THOMAS: *Diseases of the heart*, New York, p. 80, 1933.
9. WHITE, PAUL D.: *Heart disease*, New York, p. 663, 1934.
10. COWAN, JOHN, and RITCHIE, W. T.: *Diseases of the heart*, 3rd ed. Baltimore, p. 143, 1935.
11. JOURDONAIS, L. F., and MOSENTHAL, H. O.: *Am. Heart J.*, 14:375 (Dec.) 1935.
12. HARRISON, T. R.: *Failure of the circulation*, Baltimore, p. 319, 1935.
13. BEAUMONT, G. E.: *Medicine*, 3rd ed., London, p. 216, 1937.
14. FISHBERG, ARTHUR M.: *Heart failure*, Philadelphia, p. 721, 1937.
15. PRICE, FREDERICK W.: *Textbook of the practice of medicine*, 5th ed., London, p. 874, 1937.
16. KERR, WILLIAM J.: *Cyclopedia of medicine*, 11, Philadelphia, p. 926, 1939.
17. SCHERF, DAVID, and BOYD, LINN J.: *Cardiovascular diseases*, St. Louis, p. 308, 1939.
18. WHITE, P. D.: *Heart disease*, 2nd ed., New York, pp. 657-658, 1939.
19. CECIL, RUSSELL L.: *Textbook of medicine*, 5th ed., Philadelphia, p. 1159, 1940.
20. CECIL, RUSSELL L.: *ibid.*, p. 1217.
21. LEVINE, SAMUEL A.: *Clinical heart disease*, Philadelphia, p. 231, 1940.
22. LEVY, ROBERT L.: *J.A.M.A.*, 115:849, 1940.
23. STROUD, WILLIAM D.: *Diagnosis and treatment of cardiovascular diseases*, 1:643, 1940.
24. LEAMAN, WILLIAM G.: *Management of the cardiac patient*, Philadelphia, p. 393, 1940.
25. REED, W. G.: *Virginia Med. Monthly*, 67:97 (Feb.) 1940.
26. SCHWARTZ, G., TAYLOR, B., and METZ, G.: MEDICAL RECORD, 154:461 (Dec.) 1941.
27. FISHBERG, ARTHUR M.: *Heart failure*, Philadelphia, p. 721, 1937.

67 EAST FIFTY-NINTH STREET

CORONARY DISEASE AND THE INTESTINE

ANTHONY BASSLER
New York, N. Y.

"Yet every disease, every malfunction of an organ, results from a derangement in the functioning of the individual body cell. The individual body cell functions properly if it is properly fed, and if it is not killed by the invasion of bacteria, virus or chemical poisons or by endogenous toxins." So said Dr. Parran, surgeon general of the United States Public Health Service, at the closing session of the National Nutrition Conference for Defense.

Agreeing that there has been much ignorance and neglect concerning proper foods and government control of industries in the past to meet this condition; and appreciating that the public does not have to spend one hundred million dollars a year on vitamins, and that specific dieting for most diseases is largely a myth, the inhibiting and damaging factors of cell function from endogenous toxines is still calling for recognition in the profession. Much is being controlled or studied outside of these, yet the degenerative diseases are being overlooked in both their etiology and their therapeutic treatment. The usual assumption that these disorders are due "to the strain of modern life" calls loudly for a better reason. The fact that the average span of life in the past half century has added twenty years for degeneration to take place still leaves unexplained the fact that life expectancy for those over the age of forty has not increased since Pasteur's time. In the empty criticisms that have combatted the endogenous cause of diseases and disorders, the types of critical statements on the part of these critics have been distinctly restrictive to proper medical advance. The public is crying for relief and buying all sorts of questionable food products, or going to diet charlatans and doubtful types of sanitaria. It is said that medicine follows the public. It surely has not done so here. The questions are, is the public right in seeking to prevent degenerative diseases by measures of their own selection, and in this is the profession correct in denying that endogenous causes are a factor in their production?

In two hundred cases of the acid-fermentative type of intestinal toxemia, abnormalities of the cardiac rhythm occurred fifty-one times. These abnormalities were of a wide variety, and occurred in rhythm, rate, and volume. None of these were definite instances of

cardiac disease so far as the physical, x ray and electrocardiograph examinations were concerned. Of these, forty-three were treated by biological-diet procedures, and within four months in all of them the arrhythmias had disappeared. In addition, there were twenty-two instances in which diseases of the heart or arteries were considered present. Only three of these showed cardiac enlargements, all of them having clinical and pathological electrocardiographic findings suggestive of vascular or muscle involvements. Of the forty-three cases in the nonpathological arrhythmia group, thirty-seven had varying degrees of hypercholesteremia, and in the total two hundred cases it was present in 112 instances, distinctly more than half. This proportion of hypercholesteremia in cardiac arrhythmias is remarkably higher than is found in general work.

The relation of arteriosclerosis to dietary cholesterol has aroused considerable interest. Since cholesterol easily accumulates in the blood there is always the possibility of its being deposited in the walls of the arteries. Sclerosed arteries are characterized by a high cholesterol content and in extreme cases by actual deposits of cholesterol or cholesterol esters. Considering only the cardiac states of noninfectious type, in which arteriosclerosis is a factor, it is now reasonable to assume that there is a close association between arteriosclerosis, coronary artery disease, chronic myocarditis, angina pectoris, hypertension and cholesterol. Coronary sclerosis furnishes excellent evidence that arteriosclerosis is not a disease of advanced age, deaths having been reported as early as twelve years of age. Narrowing of the lumen is due to the socalled "foam cells" which invade the intima of the arteries, and with the sclerosis of the intima the arterial supply of adequate oxygen diminishes, angina pectoris ensues, and eventually myocarditis. On the other hand, we have the true infarcts due to the sudden cutting off of the blood supply by thrombosis produced by diseased vessels.

It is now believed that cholesterol is an important cause of arteriosclerosis and in this respect the disease should be preventable if the intake of animal fats (eggs, milk, butter, meats) is controlled. For this reason the vegetable fats, whose sterols are not supposed to be absorbed, are suggested to be used instead of the animal fats. But what internists and cardiologists fail to observe is that the state of the intestinal tract renders an individual with hypercholesterinemia independent of any types of fats in the diet and quite readily can make cholesterol from vegetable fats.

Cholesterol is eliminated from the body through the bile and is excreted in the stools. Its basic producing substances are taken into the body in food. In many people, even when animal fats are taken in excess, no accumulation of cholesterol takes place in the body and no harm ensues. This is due to an alkalinity in the lower ileum and right colon which makes innocuous soaps from the fatty acids, and the soaps as such are not absorbed. When, however, a high Gram positive bacterial state is present the soluble fatty acids remain as such, are absorbed and finally are synthesized into cholesterol. This occurs immediately after absorption and largely explains the cholesterol in the bile and blood. This biotoxic intestinal state was originally described years ago by Herter under the term chronic intestinal toxemia of the saccharobutyric type. Since the control of this condition by biological and dietetic measures produces definite results in the control of a hypercholesteremia, this intestinal cause of cardiac and arteriosclerotic states should be a measure of importance in coronary disease and arthrosclerosis of the arteries.

The lipids derived from fatty foods comprises about twenty-one that are known. The acid reactions of the stools of these biotoxic intestinal conditions are caused by these acids. With ergosterol, cholesterol is the only sterol absorbable from the intestine. It is probable that the fat stored in the body or occurring as phospholipids in the tissues and blood does not enter into the production of cholesterol in the body. While more important are the animal fats which accumulate in the body as cholesterol, as has been stated, it must not be lost sight of that vegetable fats are a factor here also. In such an intestinal condition the fats of the following are quite as easily broken down: olive, coconut, peanut, corn, linseed, and the fish oils. Since the amount of fats in the blood is small and the amounts of fat taken in as food is large, one may ascribe the loss of this fat to the supply of the fat tissues of the body and that but very little, if any, of this goes into cholesterol. Cholesterol itself really does not belong to the lipid group but certainly is physiologically related to them.

This problem in medicine is not only a matter of the intake of fats from which cholesterol may be made, but more particularly its synthesis in the body and importantly, its elimination. In the aciduric toxemias any of the fats are split into fatty acids and these are readily soluble. As such they are absorbed by the intestinal mucosa, and carried to the liver where mostly cholesterol is formed. The cholesterol is then excreted in the bile. One has then three sources for the production of hypercholesteremia at work: 1, The excreted supply from the bile that is reabsorbed; 2, the fats of foods that keep up the more or less normal supply of cholesterol for the blood, and 3, the acid-toxic gut state that splits down the fats into soluble fatty acids from which form the liver readily makes cholesterol of them. The marked presence of cholesterol crystals in B. fractions in medical bile aspirations in gallbladder pathologies, in which this acid toxic intestinal state always exists, proves the importance of this in local ways. Where such gallbladders are removed (especially in the noncalculous cases) usually the symptoms of indigestion return after the operation, simply because the removal of the gallbladder does not cure the acid toxic bowel.

One commonly sees in these gallbladder conditions a cardiac condition and in these people, arteriosclerosis and hypertension are common. One needs but to watch these cases over several years to note that they turn out definitely in this manner. Eventually every one of them will, and then the diagnosis becomes one of the cardiorenal-vascular conditions and no significance is attached to the removal of the gallbladder years before or the chronic saccharobutyric toxemia that had existed for years whcih had produced both conditions. The body sequence here is the toxic bowel state, hypercholesteremia, chronic cholecystitis, and finally the arterial state.

In the absence of much that we shall have to learn of the basic science of nutrition, metabolism and organ functions, no doubt the day is a long way off when we will understand cell functions in all of the different fac-

tors that operate on different people. The question is confused when we require that hypercholesteremia be present in all instances before it can be accepted as a cause of coronary or arterial disease. Susceptibility of tissue to unfavorable reaction to cholesterol even if the blood content be within normal limits is very possible and this cannot be estimated. It is probable, for reasons unknown, that a hypercholesteremia may exist for a long time and a coronary sclerosis not ensue from it. From what we know today the supposition is the other way, and in the absence of other factors bound up in effects on these arteries, we have to hold that in normal or high blood content the potentialities always exist. In the multiplying instances of these sudden deaths and cardiac accidents due to coronary involvements and what is now known of this cholesterol disease of man, an etiology is present that is not met in syphilis, or rheumatism, infections (focal also) being the cause of these cases. Very probably cholesterol disease fills this gap in a large part, and in the prevention and cure of these serious types of cardiac disease the fullest attention to cholesterol disease is justified.

Conclusions

The aciduric, biotoxic intestinal states are a common cause of cardiac arrhythmia, and the existence of cholesterol disease in man produces arteriosclerosis, coronary artery disease and subsequent myocardial involvement.

121 EAST SEVENTY-FIRST STREET

AORTIC STENOSIS COMPLICATED BY HYPERTHYROIDISM*

With Report of a Case

MITCHELL BERNSTEIN and SAMUEL SIMKINS
Philadelphia, Pa.

The combination of aortic stenosis with hyperthyroidism seems to be very unusual. Careful search of the literature revealed only two cases; one very similar to the present case report, and one in which a complicating mitral stenosis and heartblock developed.

Parry (1) in 1825 called attention to the close association of hyperthyroidism and rheumatic heart disease when he described a case of rheumatic fever preceding the development of hyperthyroidism. In 1840 Basedow (2) described four cases of exophthalmic goiter, two of which were complicated by rheumatic fever, and one by a "carditis". Subsequent mention of the coexistence of the two entities include those by Markham (3) (1858), Garnier (4) (1899), Froment (5) (1906), Bouchut (6) (1906), Coudray (7) (1909), and McCarrison (8) (1917).

Modern pathological and clinicopathological studies of the coexistence of these two entities are few in number; chiefly those of Cabot (9) (1929), Lewis (10) (1931) and Weller et al (11) (1932) and Kepler and Barnes (12) (1932). Latter-day clinical studies are almost nonexistent. White (13) (1937) considered chronic rheumatic valvular disease as only an occasional complication in exophthalmic goiter. On the other hand, Maher and Sittler (14) (1936) reported 180 cases of thyrotoxicosis, in which 23.3 percent were a complication of rheumatic valvular disease; Maher et al. (15) (1939) described a syndrome of exophthalmic goiter, acute rheumatic carditis and heart block; and as far back as 1906 Vincent found hyperthyroidism to be a complication in 55.1 percent of 156 cases of acute rheumatic fever. The skein of the interlacing etiology of these two diseases has been brought together skillfully by Llewellyn (16, 17).

The case presented below illustrates in striking fashion the existence of chronic rheumatic heart disease with aortic disease complicated in later years by the development of hyperthyroidism. The surprising feature is the paucity in the literature of reports of aortic stenosis combined with hyperthyroidism.

*From the Medical Service of Mitchell Bernstein, M.D., Jewish Hospital, Philadelphia.

Report of Case

History: A white woman, R. W., aged fifty-two, a housewife, referred by Dr. George Mandelbaum, was admitted to the medical service at the Jewish Hospital on June 20, 1940. Her chief complaints were weakness together with shortness of breath and a feeling of substantial constriction on moderate exertion—symptoms which began a year prior to admission to the hospital. These attacks were often accompanied by palpitation. The past medical history was essentially negative, except for an attack of chorea when she was fifteen years old. The menses had ceased in March 1940.

Physical examination: The patient was of sthenic habitus, in good flesh, and with a marked flushing of the face. There was slight dyspnea, especially on exertion. Cyanosis was absent. The thyroid gland was barely palpable. The heart was slightly enlarged, particularly to the left. The apex beat was easily felt just outside the midclavicular line in the fifth interspace. The left border of the heart was 11.0 cm. from the midsternal line, the right border 3.5 cm. The supracardiac dullness seemed normal. There was a marked systolic thrill associated with a loud, rough, low pitched systolic murmur over the aortic area and referred into the neck. The second sound at the aortic area was almost inaudible. The blood pressure was 110 mm. of Hg. systolic and 80 diastolic. The temperature averaged 98.0 F., the pulse 100 and the respirations 22 per minute. The physical examination otherwise was essentially negative.

Laboratory reports: Urinalysis gave essentially negative results. The blood showed hemoglobin 86 percent; red blood cells 4,300,000; and white blood cells 7,000 per cu. mm. of blood. The differential count showed polymorphonuclears 66 percent and lymphocytes 34 percent. The blood sugar was 90 mg. percent, and the blood urea nitrogen 17 mg. percent, the blood Wassermann test was negative, the bromsulphalein liver function test showed 30 percent, dye retention at the end of one-half hour, and the Van den Bergh liver function test was normal. The magnesium sulphate circulation

time test (arm-to-tongue time) was 13.7 seconds, and the ether circulation time test (arm-to-lung time) was 6.1 seconds, readings that demonstrated no failure of either the left or right heart (18, 19). The eyegrounds were normal.

The teleroentgenogram revealed slight enlargement of the heart to the left and, in the left oblique position, some encroachment on the retrocardiac space. The trachea was centrally located; there was no evidence of substernal thyroid. The lung fields were intrinsically negative. Fluoroscopy failed to reveal any calcification of the aortic valve.

The electrocardiogram showed the following: rate 100 per minute, regular sinus rhythm; P.R. interval 0.16 sec., P wave notched in leads 11-111, QRS complexes within limits of normal, T_1 and T_2 diphasic, T_3 inverted; S-T deviation in all leads.

Interpretation: The S-T changes suggest coronary artery disease, although some digitalis influence is likely. The absence of left axis deviation is particularly noteworthy.

Course in hospital: The patient's status in the hospital remained unchanged during the first few days. The cardiac rate varied between 104 and 116. Digitalis therapy (tincture of digitalis, fifteen minims three times a day) was instituted June 24, 1940, and was discontinued July 5, 1940, at which time she had received thirty cat units. The failure of the pulse rate to decrease with the patient on a regime of bed rest and digitalis, focused attention on the possibility of an underlying "masked" hyperthyroidism.

Accordingly the basal metabolic rate was determined on July 12, 1940, and found to be plus 70 percent. The blood cholesterol was 125 mg. percent. The basal metabolic rate ranged thereafter between plus 39 percent and plus 49 percent, and the blood cholesterol between 160 mg. percent and 180 mg. percent, until the patient's discharge from the hospital August 8, 1940, to undergo a course of roentgen ray therapy.

The patient was readmitted to the hospital on December 9, 1940, after having had a course of x ray irradiation with no appreciable improvement. Aside from an additional loss in weight of eight pounds, an increase in severity of the angina pectoris, and a slight increase in prominence of the thyroid gland, the symptoms and physical signs were essentially unchanged. The basal metabolic rate continued in its former range. It was plus 63 percent on February 7, 1941.

On February 11, 1941, under avertin anesthesia, supplemented by ether, a right lobectomy was performed by Dr. Norman Rothschild. The patient made an uneventful recovery. The pathological report of the excised gland showed a diffuse thyroid hyperplasia. On February 21, 1941, the basal metabolic rate was plus 26 percent and the pulse rate 94 per minute. On March 4, 1941, at the time of the patient's discharge from the hospital, the basal metabolic rate was plus 16 percent, the pulse rate was 86 per minute and the patient exhibited symptoms and signs only of the aortic stenosis.

On April 15, 1941, the patient showed a gain in weight of twenty-two pounds from the time of operation, February 11, 1941, the basal metabolic rate at this time being plus two percent. Moreover, she had been free of anginal attacks from the time of operation until April 15th. In spite of repeated warnings to the patient to restrict her physical activities, she persisted in her usual behavior. Following a day of unusual exertions, she died very suddenly on June 30, 1941, from an anginal attack.

Discussion

The clinical overlapping of Graves' disease and rheumatic heart disease is so striking that one is surprised at the comparative neglect given this topic in modern medical literature. Llewellyn (16, 17) has presented a strong case tending to prove that the two syndromes tend to hark back to some common fundamental etiological substrate. He draws attention, as do a few others, to:

"1. The frequency of acute rheumatism, chorea and mitral stenosis as antecedents of Graves' disease.

"2. That the sequence may be reversed viz: the victim of Graves' disease develop acute rheumatism or chorea.

"3. The two syndromes, acute rheumatism or chorea and Graves' disease, may arise simultaneously and coexist".

The case report we have presented fits into the first group mentioned above. The fact that the chorea antedated the onset of symptoms by thirty-seven years apparently does not invalidate the chorea as the probable etiological factor in the development of the aortic stenosis, inasmuch as Gibbs (20) found in a series of twenty-seven carefully studied cases of aortic stenosis (twenty-six with autopsies) a spread of five to forty-seven years from the rheumatic infection to the hospital admission.

Although fluoroscopy failed to reveal calcification of the aortic valve, probably at least a slight amount of calcification was present, since in patients over the age of forty with rheumatic aortic stenosis calcification is the rule rather than the exception (20). Moreover, Dry and Willius (21) found in a study of 2616 consecutive autopsies (designed to ascertain the incidence of calcareous disease of the aortic valve among all varieties of healed rheumatic valvular disease), no instance of stenosis of the aortic valve without some degree of calcification. It is noteworthy in passing, that modern opinion leans unequivocally to rheumatic fever as the etiological factor in all calcareous disease of the heart (21, 22).

The considerable reduction in intensity of the second aortic sound points to a considerably advanced degree of stenosis (21). An atypical feature was the absence of left axis deviation electrocardiographically, inasmuch as left axis deviation is the usual finding in aortic stenosis (21). The teleroentgenogram showed moderate enlargement of the heart. Aortic stenosis produces extreme hypertrophy of the left ventricle (23) but the size of the cardiac silhouette is not greatly increased (24).

Sudden death in aortic stenosis, especially induced by unusual exertion, is a well known accident. The literature is replete with such reports. The factor is unknown as yet, having probably the same mechanism that causes death in patients with angina pectoris due to coronary sclerosis (24, 25).

Lewis (10) described, amongst a series of twelve necropsies of hyperthyroid patients, one case of aortic stenosis in a woman aged sixty-four years who had had a goiter for thirty years, operation twelve years previ-

ously, and recurrence with the onset of symptoms one year prior to hospital admission. Maher et al. (15) reported one case of a young man in whom the rheumatic and hyperthyroid syndromes seemed to have begun at the same time. The aortic stenosis developed first, and subsequently mitral stenosis and heart block.

Conclusions

Attention is drawn to the coexistence of the rheumatic and hyperthyroid syndromes.

A rare case of aortic stenosis complicated by the development of "masked hyperthyroidism" is presented.

References

1. PARRY, CALEB H.: Collections from the unpublished writings of the late Caleb H. Parry, M.D., London.
2. VON BASEDOW, KARL: Exophthalmos durch Hypertrophie des Zellgewebes in der Augenhöhle, *Wchnschr. f. d. ges Heilk.*, 6:197, 1840.
3. MARKHAM: Affection of the heart with enlargement of the thyroid and thymus glands and prominence of the eyes, *Tr. Path. Soc.*, London, 9:163, 1858.
4. GARNIER, M.: *La Glande thyroide dans les maladies infectieuses*, Paris, 1899.
5. FROMENT, J.: *Cardiopathies valvulaires compliqués de Basedowisme*, Lyons, 1906.
6. BOUCHUT, L.: *Rôle du rhumatisme articulaire aigu et subaigu dans*, l'etiologie de la maladie de Basedow et dans sa terminaison par l'systolic, Lyons, 1906.
7. COUDRAY, P.: *De l'influence des maladies infectieuses sur la glande thyroide*, Montpellier, 1909.
8. MCCARRISON, R.: *The thyroid gland in health and disease*, New York, 1917, William Wood and Company.
9. Cabot's Case Record, No. 15472: Exophthalmic goiter and acute rheumatic fever, *New England J. Med.*, 201:1056, 1929.
10. LEWIS, WILLIAM: Hyperthyroidism and associated pathology, *Am. J. Med. Sci.*, 181:65, 1931.
11. WELLER, C. V., WANSTROM, R. C., GORDON, H., and BUGHER, J. C.: Cardiac histopathology in thyroid disease: preliminary report, *Am. Heart J.*, 8:18, 1932.
12. KEPLER, E. J., and BARNES, A.: Congestive heart failure and hypertrophy in hyperthyroidism: a clinical and pathological study of 178 fatal cases, *Am. Heart J.*, 8:102, 1932.
13. WHITE, P. D.: *Heart disease*, New York, 1937, p. 303, Macmillan Co.
14. MAHER, C. C., and SITTLER, W. W.: The Cardiovascular state in thyrotoxicosis, *J.A.M.A.*, 106:1546, 1936.
15. MAHER, C. C., SANDERS, A., PLICE, S. G., and WOSIKA, P. H.: A syndrome of exophthalmic goiter, acute rheumatic carditis and heart block, *Am. Heart J.*, 17:742, 1939.
16. LLEWELLYN, L. J.: Aspects of rheumatism and gout, London, 1927.
17. LLEWELLYN, L. J.: The cardiac fallacy in acute rheumatism, *Brit. J. Phys. Med.*, 6:208, 1932.
18. BERNSTEIN, M., and SIMKINS, S.: The use of magnesium sulfate in the measurement of circulation time, *Am. Heart J.*, 17:218, 1939.
19. BERNSTEIN, M., and SIMKINS, S.: Magnesium: the effect of intravenous injections on the human heart, *Jour. Lab. and Clin. Med.*, 25:131, 1939.
20. GIBBS, A. J.: Aortic stenosis: its etiology and morbid anatomy, *Guy's Hospital Reports*, 15:275, 1935.
21. DRY, T. J., and WILLIUS, F. A.: Calcareous disease of the aortic valve, *Am. Heart J.*, 17:138, 1939.
22. HALL, E. M., and ICHIOKA, T.: Etiology of calcified nodular aortic stenosis, *Am. J. Path.*, 16:761, 1940.
23. WILLIUS, F. A.: Cardiac Clinics XLVIII: Clinic on calcareous aortic stenosis, enormous cardiac enlargement and congestive failure, *Proc. Staff Meet., Mayo Clinic*, 13:237, 1938.
24. CONTRATTO, A. W.: Salient features of aortic stenosis and how it differs from the clinical manifestations of other valve lesions, *Med. Clin. N. America*, 24:1365, 1940.
25. TEXAN, M.: Calcific aortic stenosis—a clinical entity, *New England J. Med.*, 220:992, 1939.

1321 SPRUCE STREET

A SIMPLIFIED CHEST LEAD TECHNIQUE FOR ROUTINE CLINICAL USE

J. BAILEY CARTER

Chicago, Ill.

Precordial leads have become indispensable in electrocardiography. Since their reintroduction (1), in 1932, new methods for recording them have been presented so rapidly that it has been difficult for the clinician to keep abreast of these developments.

The Committee for the Standardization of Precordial Leads (2) accomplished much by pointing out the numerous chest leads available and by establishing standard technique and nomenclature for the various leads. This should be of definite assistance in directing research along specified lines.

The confusion which has resulted from the lack of a simple, practical, uniform and precise technique for recording chest leads, in routine clinical practice, is to be regretted. If the results of academic research are to find clinical application, without the customary lapse of a decade, the physician must be given usable knowledge. Procedures must be simplified. Methods must be practical and readily applicable.

Since the recommendations (2) were not final and were not intended to discourage further investigation in this field, the following report would seem to be in order.

As yet, there is no agreement as to the preferred lead; the best location for the proximal or distal electrode (3). In the past, some have preferred a right arm to precordium (4-7), others a precordium to left leg chest lead (8). At present, some prefer lead IVR (9, 10), others feel that IVF is superior (11), while still others record CF_3, CF_4 and CF_5 (12), CF_2 and CF_4 (13), and IVR or IVF with CR_2 or CF_2 (14), routinely. Although IVF is preferred (2) many now use a IVR chest lead because of the simpler technique. Standard technique and nomenclature require that specifications for obtaining the various leads be followed explicitly. Many chest leads, incorrectly designated IVR or IVF, are in fact CR_4 or CF_4; the result of improper location of the chest electrode. Experience in interpreting or reviewing many IVR and IVF leads, as well as a considerable number of most of the other types of chest leads, reveals that similar inaccuracies are not uncommon.

In the past, the original lead IV and lead V^1, identical in appearance,[2] were most widely used. Over a period of years the characteristic features of a normal and abnormal lead IV and lead V were established.

Clinicians learned to dependably recognize significant variations in these leads. Those interested, realized that polarity was reversed in these leads.

The new technique requires (2) that relative positivity of the apical electrode be represented by an upward deflection, and relative negativity by a downward deflection in the electrocardiogram. Wolferth and Wood

A B

FIG. 1.—A. Routine technique for recording limb leads.
B. Simplified technique for recording chest leads.
(*Courtesy of the Illinois Medical Journal*)

(1), in their original article on lead IV, in 1932, suggested, as an alternative, that the lead wires be reversed if upright deflections were desired. Since there is no logical reason for reversal of lead wire connections and some practical disadvantages, the suggestion was never universally accepted. It has caused considerable confusion to have chest leads turned upside down.

Authoritative opinion states (6) that apical chest leads are unsatisfactory for routine clinical use. That a relatively small change in the position of the apical electrode may cause appreciable alterations in the electrocardiogram has been emphasized (15-18). As previously emphasized (19), "We have not found it satisfactory to place the chest electrode over the apex of the heart, as is done in some clinics" (15). Erroneous findings, when IVR and IVF were employed, have demonstrated the undesirability of these chest leads (14). To attempt to routinely "place the precordial electrode upon the extreme outer border of the apex beat as determined by palpation" (2) is impractical (19). Frequently, the physician can not determine the location of the cardiac apex (18). The apex impulse, at best, is very elusive; particularly in patients of an age most liable to sustain a coronary occlusion (6). Their chests are often obese and/or hypersthenic; their lungs emphysematous; and their hearts, especially after an acute injury, may be too feeble to produce a palpable impulse. Women, likewise, often present a perplexing problem. Frequently, for the above and for various other reasons, the apex beat can not be indicated for the technician. Many prefer that the precordial electrode be placed in the fifth intercostal space at the midclavicular line; no attempt being made to follow the apex beat laterally. Such a technique is essential if chest leads are to be used to the greatest advantage by clinicians.

To record chest leads as specified (2) requires multiple changes in electrode connections. Such shifting of lead-wire connections introduces another possible source of error. It has been responsible, in many instances, for confusion in the interpretation of improperly recorded electrocardiograms.

Since, with the greater utilization of the method, fewer and fewer clinicians actually record their own electrocardiograms, chest lead technique should be simple. The technician should not be expected to locate apex beat or left heart border, which at times, may mislead even a physician unless fluoroscopy is employed. The procedure for recording precordial leads should be such that consistently dependable work may be done in spite of the many disturbing factors so often present. A minimum of lead-wire connections is greatly to be desired.

It would appear then that a simple technique, universally applicable, for routine clinical use, would be of definite value. As with the three limb leads, the clinician would then know the location of the precordial electrode, regardless of the source of the graph. If such is to be accomplished the position of the chest electrode must be a fixed point.

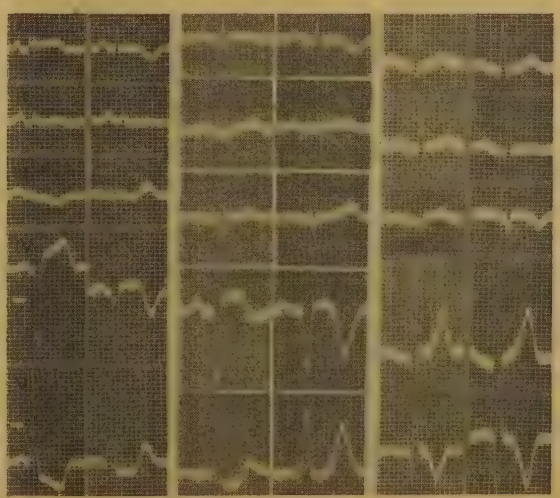

FIG. 2.—A. Early and late T_1 type occlusion curves.
B. Early and late T_1 type occlusion curves.
C. Early and late Q_3T_3 type occlusion curves.

That the location of the normal apex beat, in the majority of instances, is in the fifth interspace at the midclavicular line, is well recognized. It is a logical position for the primary electrode. This, as a fixed point for the application of the precordial electrode, provides a constant technique. It enables the clin-

[1]In recording lead IV (1) the electrodes were applied to the anterior and posterior surfaces of the chest wall, at the cardiac level, just to the left of the midline. The anterior electrode was connected to the right arm lead wire and the posterior electrode to the left arm lead wire. Since the proximal electrode dominates the curve and change in position of the distal electrode effects the contour of the chest lead but little, it was found that the distal electrode could be more conveniently applied to the left leg (lead V); the right arm lead wire still being connected to the precordial electrode.

[2]In a normal lead IV or lead V (inverted CF_4) the P wave is inverted and shallow; the Q wave is prominent; the QRS complex is diphasic and large; the ST interval has practically no isoelectric period; the T wave is large and inverted. A normal CR_4 is of similar contour except corresponding deflections are oppositely directed; polarity of the primary electrode being reversed.

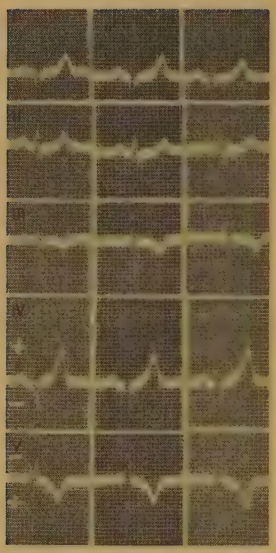

FIG. 3.—Serial curves to eliminate possible occlusion. The technique described permits duplication of chest lead curves in most instances. This is frequently of great assistance. If it is recognized that the technique employed permits routine duplication of chest leads, then minor variations, otherwise undependable, assume diagnostic significance. A severe anginal attack in a woman, aged fifty, so closely simulated coronary occlusion that only by serial curves was such a possibility eliminated.

ician to give specific instructions. The technician can then perfect a definite procedure for recording chest leads. Such a standard technique greatly simplifies clinical work. If the clinician is to have the full benefit of serial electrocardiograms, *it is important that the position of the precordial electrode be a fixed point.* Only then can variations in serial chest leads be attributed to progressive myocardial change. A uniform technique is essential if the maximum benefit is to be derived from precordial leads in the diagnosis and study of infarction and other myocardial involvement.

A simplified technique, modified from Roth (6) has been routinely employed by us during the past six years for recording chest leads in over five thousand five hundred electrocardiograms, including records of 487 patients showing definite graphic evidence of coronary occlusion. After the three standard leads are recorded the left arm electrode is removed[3] and applied to the left chest in the fifth interspace at the midclavicular line; lead wire connections remaining undisturbed. The electrode is held in place by the fingers of the patient, or an assistant, lightly applied to the overlying folded rubber strap, for insulation. Lead I and lead III on the control board are selected in turn; a lead CR_4 and lead V (inverted CF_4) being recorded in succession. Two leads have definite advantages over a single precordial lead (20). Both leads are obtained more simply and accurately by this

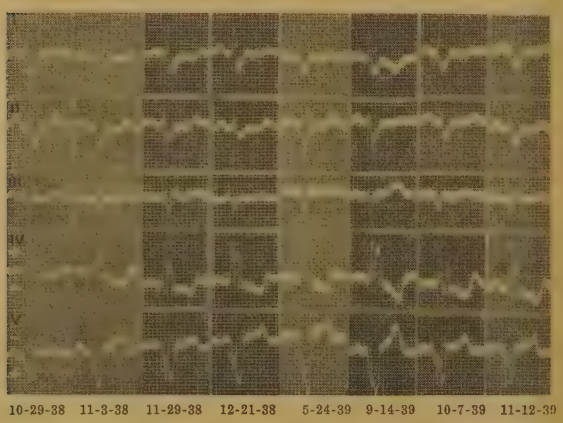

FIG. 4.—In the presence of marked intraventricular conduction defect, particularly of bundle branch type, the diagnosis of occlusion is difficult. An electrocardiogram, early in 1935, two subsequent limb lead curves and the three standard leads of the graph of October 29, 1938 were duplicates; no chest leads having been recorded in the earlier records. Although a severe anginal attack preceded each graph and was considered a possible occlusion, severity of symptoms, marked findings, and subsequent clinical course, suggest that the attack immediately preceding the graph of September 14, 1939 was probably the only one associated with actual infarction. The patient, a physician, is in practice. A technique whereby the complicated contour of these companion chest leads could be repeatedly duplicated by various technicians was of great assistance.

[3]This is done for convenience, since we have found no particular advantage in the use of a circular electrode[21]. A special chest electrode, however, may be used.

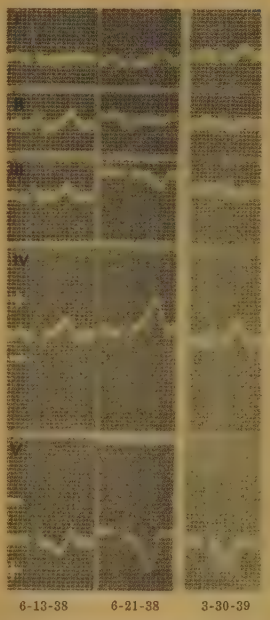

FIG. 5.—That the contour of T_5, while not diagnostic of occlusion, was sufficiently suggestive to justify conservative management is shown by subsequent graphs. In many instances only one of the companion chest leads, usually lead V, reveals significant change; thereby demonstrating the inadequacy of any one single chest lead.

FIG. 6.—A. A record several months following a severe occlusion. Note that Lead V presents the only remaining evidence of infarction. The physician is actively engaged in practice.
B. Here again, lead V presents the only dependable evidence of an anterior infarction.

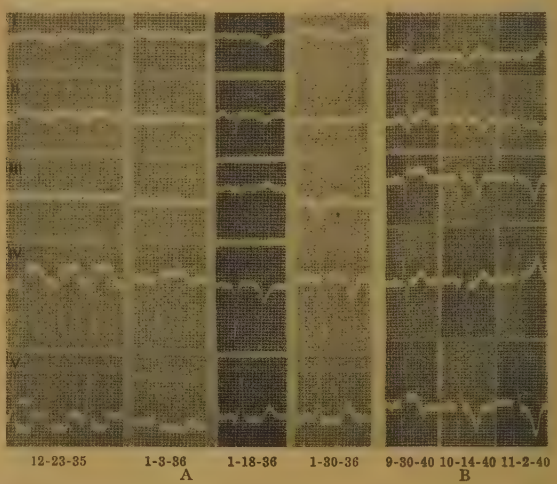

FIG. 7.—A. Serial curves showing early and late T_1 changes.
B. Early and late Q_3T_3 changes with S-T interval displacement in lead V only of the initial record.

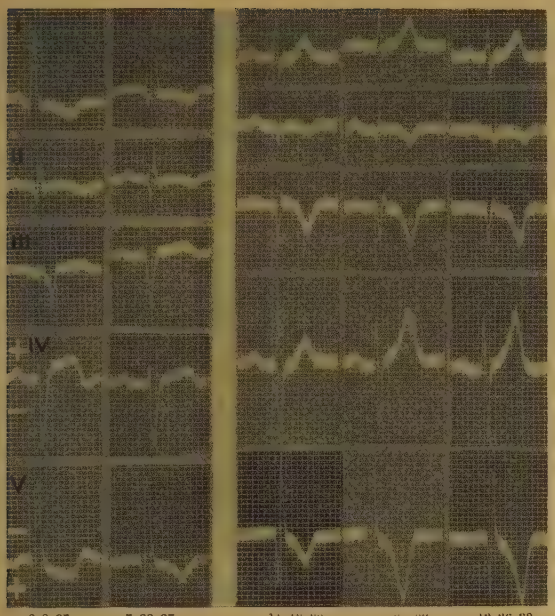

FIG. 8.—A. Serial curves of T_1 type. Note persistence of R_4 and Q_5; slight reversal of T_{4-5} polarity being the only sign of infarction in chest leads.

technique than is a single chest lead by any of the other more complicated methods. The recording of more than two such leads entails difficulties, increasing directly with the number of leads employed, and is, in most instances, impractical for routine clinical use.

The above combination of chest leads serves a dual purpose. For those who prefer that relative positivity of the precordial electrode be represented by an upward deflection, and relative negativity by a downward deflection, the first chest lead, a CR_4, according to the new terminology, serves admirably. For those

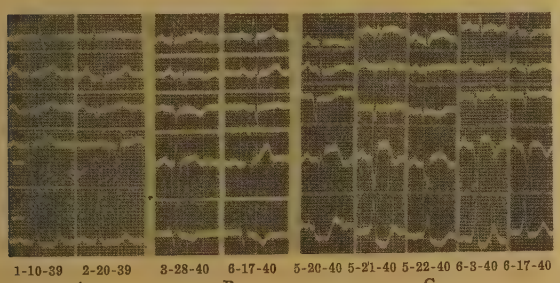

FIG. 9.—A. Chest leads essential for diagnosis of infarction.
B. Note contour of T_4 of initial record.
C. Serial curves of T_1 type following anterior apical infarction.

whose knowledge of chest leads is based primarily on leads IV and V of Wolferth, with corresponding deflections oppositely directed, a standard lead V (inverted CF_4), is provided. The latter serves as a connecting link between old and new chest lead terminology. The value of such a combination is well recognized. Since lead V has been so much more widely employed, the more extensive knowledge of this lead serves as a useful check on the newer (CR_4) chest lead. The technique conforms to the recommendations of the Committee (2) for the recording of CR_4 and CF_4 in every detail, except that of CF_4 polarity. As well recognized, this is of academic rather than clinical interest.

This experience shows that the indifferent electrode plays a noticeable rôle in the contour of the electrocardiogram. Therefore, the use of two indifferent elec-

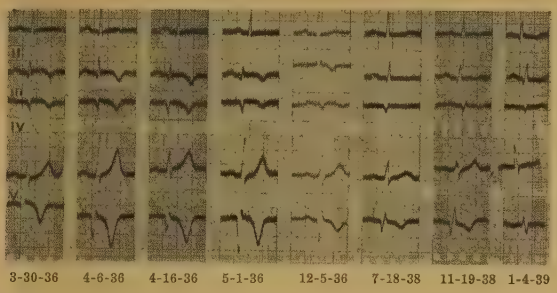

FIG. 10.—Serial curves of Q_3T_3 type following posterior basal infarction.

trode sites with a single direct electrode site, gives more information than does a single combination. We have found that CF is better than CR, in most instances. This, however, is not always true. It is inconvenient to shift lead wire connections in order to abide by the Committee's original recommendation. Therefore, for expediency, we prefer to have reversed polarity. To fall in line with the committee's report, polarity of chest leads is indicated by plus and minus signs. The advantages of two leads, employing two indifferent electrode positions with one direct electrode site, while still abiding by committee recommendations, is thereby obtained.

We realize that various workers have individual preferences. We recognize that certain other chest leads may be particularly advantageous in some, less common conditions. Nevertheless, no other combination of chest leads is supported by such a wealth of experience. No other method for recording chest leads is so simple and fool-proof. No other lead, or combination of leads, has afforded more information in routine practice.

The foregoing suggestions, it would seem, might "simplify the use of precordial leads for those who desire to employ them in everyday clinical work, and to reduce the confusion that exists at present because of the lack of uniformity and precision in current technique and nomenclature" (2).

Bibliography

1. WOLFERTH, C. C., and WOOD, F. C.: Electrocardiographic diagnosis of coronary occlusion by the use of chest leads. *Amer. Jour. Med. Sci.*, 183:30 (Jan.) 1932.
2. Standardization of precordial leads. *Amer. Heart Jour.*, 15:107 (Jan.) 1938 and *J.A.M.A.*, 110:395 (Jan. 29) 1938.
3. WOLFERTH, C. C., and WOOD, F. C.: Prediction of differences between precordial leads CR, CL, and CF, based on limb lead findings. *Amer. Heart Jour.*, 20: 12 (July) 1940.
4. EINTHOVEN, W., and DELINT, K.: Ueber das normale menschliche Electrokardiogramm und über die Capillar-Elektrometrische untersuchung einiger Hertzkranken. *Arch. f. d. ges. Physiol.*, 90:139, 1900.
5. JERVELL, A.: Elektrokardiographische Befunde bei Herzinfarkt. *Acta. Med. Scandinav.* supp. 68:1-267, 1935.

6. ROTH, I. R.: On the use of chest leads in clinical electrocardiography. *Amer. Heart Jour.*, 10:798, (Aug.) 1935.
7. LARSEN, K. H.: Some remarks on the technique in clinical electrocardiography with precordial derivation. *Amer. Heart Jour.*, 14:1 (July) 1937.
8. WILSON, F. N., ET AL: The Order of ventricular excitation in human bundle-branch block. *Amer. Heart Jour.*, 7:305 (Feb.) 1932.
9. EDWARDS, J. C., and VANDER VEER, J. B.: Study of the chest leads of the electrocardiogram with an evaluation of the positions of the precordial electrode. *Amer. Heart Jour.*, 16:431 (Oct.) 1938.
10. HOSKIN, J., and JONESCU, P.: Analysis of fifty normal electrocardiograms, including lead IV. *Brit. Heart Jour.*, 2:33 (Jan.) 1940.
11. GEIGER, A. J.: Comparative study of precordial leads IVR and IVF. *Amer. Heart Jour.*, 18:715 (Dec.) 1939.
12. WOOD, F. C., and WOLFERTH, C. C.: Recent developments in precordial electrocardiography; Modern Concepts of Cardiovascular Disease. 8:1 (Jan.) 1939.
13. KATZ, L. N.: Personal communication to the author.
14. BARNES, A. R.: *Electrocardiographic Patterns*, Springfield, Charles C. Thomas, 1940.
15. BOHNING, A., and KATZ, L. N.: Four lead electrocardiogram in cases of recent coronary occlusion. *Arch. Int. Med.*, 61:241 (Feb.) 1938.
16. HOFFMAN, A. M. and DELONG, E.: Standardization of chest leads and their value in coronary thrombosis and myocardial damage. *Arch. Int. Med.*, 51:947 (June) 1933.
17. WOOD, F. C., ET AL.: Electrocardiographic study of coronary occlusion: further observations on the use of chest leads. *Arch. Int. Med.*, 52:752 (Nov.) 1933.
18. SCHERF, D., and BOYD, L. J.: *Clinical Electrocardiography*, St. Louis, The C. V. Mosby Company, 1940.
19. CARTER, J. B.: *Fundamentals of Electrocardiographic Interpretation*, Springfield, Charles C. Thomas, 1937.
20. WOOD, P. and SELZER, A.: Chest leads in clinical electrocardiography. *Brit. Heart Jour.*, 1:49 (Jan.) 1939, abst., *Am. Heart Jour.*, 18:125 (July) 1939.
21. Standardization of precordial leads: Supplementary Report. *Am. Heart Jour.*, 15:235, (Feb.) 1938 and *J.A.M.A.*, 110:681 (Feb. 26) 1938.

Coronary Artery Occlusion

Arthur M. Master, Simon Dack, and Harry L. Jaffe (*New York State Journal of Medicine*, March 1, 1942) present their findings in a study of 202 patients treated in Mount Sinai Hospital for acute coronary occlusion who survived the attack at least one year. The longest follow-up period was six years, the average being three years. They summarize their findings as follows:

1. A detailed follow-up study of the cardiac status, as determined by symptoms and physical examination, has been made in a group of 202 patients who had recovered from an acute coronary occlusion one to six years previously.

2. Clinical recovery from the attack was good in one-third, poor in two-fifths, and fair in the remainder of the series. Two-fifths showed no or only slight restriction of physical activity.

3. Two-thirds of the patients complained of precordial pain, dyspnea, or fatigue and one-third had no symptoms of cardiac disability.

4. Angina pectoris occurred in three-fifths of the patients. Coronary occlusion may initiate an anginal syndrome or aggravate one previously present. On the other hand, preexisting angina pectoris may disappear completely following the attack.

5. Dyspnea, present in over half the patients, was occasionally the only symptom of heart failure or cardiac disability.

6. Weakness was common but only rarely occurred in the absence of pain or dyspnea.

7. Chronic congestive heart failure was present in one-fourth the patients.

8. Persistent diminished amplitude of the heart sounds, particularly the first apical sound, was observed in about one-half the patients. This sign may be of diagnostic value in subjects over forty suspected of coronary disease.

9. The heart rate and rhythm were normal in the great majority of patients. Paroxysmal or permanent auricular fibrillation occurred in only five patients. The rarity of arrhythmias is in marked contrast to their frequency in the acute stage of coronary occlusion.

10. Hypertension, which had been present in two-thirds of the patients prior to the acute attack returned or persisted in only one-third of the group following recovery. Although hypertension did not influence the severity of angina pectoris or the frequency of subsequent attacks, it was more common in those who developed heart failure and in those whose clinical recovery was poor.

11. One-half the patients resumed their former occupations, either full or part time. Inability to work was nearly always attributable to an anginal syndrome or heart failure. Mild angina pectoris or dyspnea, however, did not prevent return to work. The great majority of patients who resumed work did so within six months after discharge from the hospital.

12. It is concluded that at least one-third of hospital ward patients who recover from acute coronary occlusion may lead a fairly active life with no, or only slight, restriction of ordinary activities.

Cardiac Signs in Rheumatic Infection

Rachel Ash (*American Journal of Diseases of Children*, January, 1942) presents an analysis of the cardiac signs in a group of 553 children with rheumatic infection who had been followed for an average period of nine and six-tenths years from onset. Thirty-eight percent of these children presented no definite clinical evidence of cardiac damage as a result of the initial illness. It is probable that pathological examination would have disclosed changes in the hearts of many of them indicative of rheumatic infection, possibly of minimal degree. In nineteen percent of this group for whom a diagnosis of valvulitis was not made at onset, definite valvular damage subsequently developed, which in eighty percent, however, was the result of an acute recrudescence of the disease. The valvular damage which developed in six of them in the seeming absence of infection and after a prolonged latent period may be interpreted as due to continued subclinical activity of the infection or to progressive fibrosis in the healing stage of a valve which had failed to disclose its initial damage by clinical signs.

Disappearance of physical signs of heart disease occurred in ten percent of the children who had presented signs of cardiac damage after recovery from the initial infection. Minimal anatomical changes probably persist in many of these patients. At the end of the period of observation one quarter of the children had died of heart disease, a third of the deaths having occurred within the first year of the infection. Sixty percent of the group either had no heart disease or were not prevented by their cardiac damage from leading a normal existence.

Practical Therapeutics

TANNIC ACID IN WOUND THERAPY

MILTON KUNIN
Brooklyn, N. Y.

The essential requirements of wound treatment are hemostasis, cleansing, removal of devitalized tissue, antisepsis, and protection against further injury and infection. The omission of any of these may result in disastrous consequences. Since, however, the treatment of war injury begins on the battlefield, therapeutic intervention must of necessity be restricted to measures capable of accomplishment in the peculiar environs of the battlefield. Therefore, debridement, which is of prime importance must be delayed until the patient arrives at the hospital. It is in this interval, between the initial infliction of trauma, and the arrival at the hospital, that the wound is left in a state in which it liberates toxins from necrotic areas, and bacterial proliferation goes on quite freely in the excellent medium provided by the devitalized tissue. The problem then is to render the dead tissue incapable of liberating toxins, and of supporting pathogenic flora. Clearly the best method of attaining this end is to tan the tissue.

Tannic acid unites with devitalized tissue to form a hard, aseptic crust which acts as a perfect dressing for the wound. Bacteria are incapable of growth in the tanned tissues due to deficiencies in the environment, and the bacteriostatic action of tannic acid. Exudation is reduced to a minimum, since the eschar is adapted perfectly to the raw surface, and because of the protein coagulating effect of the solution. The crust protects against further contamination and mechanical injury (1).

The treatment may be applied as a first aid measure even by the inexperienced and requires no special apparatus. It may be seen that it satisfies all the requirements of wound treatment (including hemostasis since tannic acid is hemostatic), except for cleansing, which must precede it (*vide infra*).

When the patient arrives at the hospital, the wound will be in a condition which will allow of delay in treatment, giving the surgeon time to pursue a policy of watchful waiting, so that in many cases conservative rather than radical surgery could be practised. No doubt this would reduce the incidence of amputation in war injuries. As is well known, debridement intensifies shock. The condition of the wound will enable the surgeon to wait for the optimum time for surgical interference, when primary shock has diminished and the patient is in condition for operative intervention. Moreover the areas of dead tissue will be delineated sharply by the absence of tanning in the uninjured tissue, permitting a more accurate appraisal of the extent of injury.

In a communication to a branch of the Army Medical Department this suggestion was put forward. The treatment is being considered for postoperative use, but the objection was put forward that tanning might interfere with subsequent debridement. On the contrary, debridement becomes more simple, more rapid, and more efficient. The entire crust with its encapsulated bacterial contents could be easily stripped away in toto, leaving a bed of normal tissue. This, in fact, is one of the most desirable features of the tanning process. There is a modicum of shock intensification because of the rapidity and minimal handling of tissues involved in stripping away the tanned crust, as opposed to routine debridement.

Technique

The technique is the same as the treatment of third degree burns. After preliminary cleansing and disinfection, a three to five percent solution of tannic acid incorporated in 1:5000 metaphen or other suitable antiseptic is applied by spray or by compresses laid on the wound. The wound is inspected at intervals, and additional solution is applied to untanned areas, or if this is impractical, the dressing is kept saturated with the solution for twenty-four to forty-eight hours.

When the patient arrives at the hospital the eschar is stripped away and the wound again cleansed and disinfected. The solution of tannic acid is then reapplied. The crust which forms again acts as a temporary epidermis (4, 5). Granulation is stimulated and healing goes on underneath the eschar, which gradually separates from the wound as healing progresses. This dressing need not be changed unless infection occurs. Infection is manifested by a raising of the eschar, in which case the crust is cut away over the area of infection and antiseptic treatment applied.

In conclusion it might be stated that in view of the experience of the British (2) in connection with posttraumatic infection occurring in hospital wards and dressing stations, any treatment which would not require frequent change of dressings is highly desirable (3). Arrangements have been made for a comparative study of this method of treatment. Clinical reports will follow.

Bibliography

1. Nathanson, Ira T.: Tannic acid. Its use in the treatment of abrasions and allied conditions. *Amer. Jour. Surg.*, 20:38-39 (April) 1933.
2. Abstract of report of British Medical Research Council to Committee on War Wounds. *What's New*, 51:11-21 (Sept.) 1941.
3. McKissock, W., Wright, J., and Miles, A. A.: The reduction of hospital infection of wounds. *Brit. Med. Jour.*, 2:375 (Sept.) 1941.
4. Walter, A. B.: Denuded surface treated with tannic acid. *Canad. Med. Assn. Jour.*, 17:1517-1518 (Dec.) 1927.
5. Cronk, H. L.: Immediate treatment of abrasion with tannic acid powder. *Medical Officer*, 52:173 (Oct.) 1934.

5603 Snyder Avenue

News Items

American Surgical Association.—The annual meeting of the American Surgical Association will be held in Cleveland, April 6th-8th, under the presidency of Dr. Harvey B. Stone, of Baltimore.

Merger of New York Hospitals.—Dr. John V. Donnet, president of the Medical Board of the West Side Hospital and Dispensary of the City of New York, has announced that this institution has taken over the Medical Arts Center Hospital, the merger taking effect on February 1st. The combined institution will operate under the name of West Side Hospital and Dispensary of the City of New York.

Friday Afternoon Lectures.—The eighteenth lecture of the series will be given on April 10th by Dr. William Goldring, associate professor of medicine, New York University College of Medicine. His subject will be "Edema: Its Pathogenesis and Treatment."

Lane Lectures.—Announcement is made that the sixtieth course of Lane lectures will be given at Stanford University School of Medicine as follows: Dr. John R. Upton, The blood bank: its purpose and uses in wartime, April 3d; Dr. Anthony John J. Rourke, Medical aspects of civilian defense, April 17th; Dr. Henry W. Newman, Alcohol in relation to driving hazards, May 1st; Dr. Charles W. Barnett, Control of venereal disease under war conditions, May 15th.

Friday Afternoon Lectures in Brooklyn.—The fourth lecture in the series of Friday afternoon lectures and Monday panel discussions given by the Medical Society of the County of Kings, Brooklyn, will be given by Dr. Eugene R. Marzullo on April 10th. His subject will be Transfusions. Other lectures in the series are: April 17th, Sulfa compound therapy, by Dr. Wheelan D. Sutliff, of New York; April 24th, Diarrheas in infancy and childhood, by Dr. Thurman B. Givan, of Brooklyn.

Treatment of Intractable Pain.—A special service for the treatment of intractable pains has been instituted at the International Medical Center under the direction of Dr. A. L. Soresi. This treatment is based mainly on anesthesia limited to the posterior sensitive spinal roots and their ganglia supplemented by any other effective medical and operative procedure advisable in each case. Patients unable to pay for treatment will be treated gratis; all fees will be considered contributions to a fund for further studies on algias.

New York Physicians Association.—A stated meeting of the New York Physicians Association was held on Wednesday evening, March 25th. The program included the following papers: Medical treatment of biliary tract disease, by Dr. Henry Rafsky; Diagnosis and treatment of benign and malignant lesions of the stomach, by Dr. Ralph Colp. The discussion was opened by Dr. Max Einhorn; Dr. A. J. Beller; Dr. Elihu Katz; Dr. Edward Hollander; Dr. Charles Gottlieb; Dr. William Jacobson. The officers of this association are: Dr. Oscar L. Levin, president; Dr. I. M. Brenner, president-elect; Dr. Elihu Katz, first vice-president; Dr. Bret Ratner, second vice-president; Dr. A. J. Greenberger, secretary; Dr. Samuel Hochman, recording secretary; Dr. Joseph Q. Jonas, treasurer.

New York Tuberculosis and Health Association.—Dr. J. Burns Amberson, Jr., was elected president of the New York Tuberculosis and Health Association at the recent annual meeting and other officers were elected as follows: Dr. Bailey B. Burritt, first vice-president; Dr. Edward P. Maynard, second vice-president; Dr. I. C. Raymond Atkins, treasurer.

Joint Meeting of Genitourinary and Pediatric Sections.—On Thursday evening, April 9th, there will be a combined meeting of the Section of Genitourinary Surgery and the Section of Pediatrics, of the New York Academy of Medicine. The program will include the following two papers: Wilms' tumor, by Dr. Sydney Farber, and Indications for urological investigation in children, by Dr. John D. Lyttle. Dr. Meredith F. Campbell will open the discussion.

Section of Dermatology and Syphilology.—At a meeting of the Section of Dermatology and Syphilology, of the New York Academy of Medicine, to be held on Tuesday evening, April 7th, the program will consist of a presentation of cases by the skin and cancer unit of the Post-Graduate Hospital and Medical School, Columbia University. A general discussion will follow.

American Society for Control of Cancer.—At the annual meeting of this society held on March 7th, the following officers were elected: Dr. Herman C. Pitts, of Providence, R. I., president; Dr. John J. Morton, Rochester, N. Y., chairman of the board of directors; Dr. Frank E. Adair, New York City, vice-president; Dr. C. P. Rhoads, New York, secretary; Dr. James H. Ripley, New York, treasurer; Dr. Clarence C. Little, Bar Harbor, Me., managing director; Drs. Howard C. Taylor and James B. Murphy, New York, E. P. Pendergass, Philadelphia, Pa., George M. Smith, New Haven, Conn., and E. B. Wilson, Boston, Mass., executive committee.

Columbia University Hospital Unit Ordered to Active Service.—The Second U. S. Army General Hospital Unit, consisting of fifty-five members of the staffs of the College of Physicians and Surgeons, the School of Dental and Oral Surgery and the Columbia-Presbyterian Medical Centers, have been called to active duty. The chief of the surgical service is Dr. W. Barclay Parsons, associate professor of clinical surgery and the chief of the medical service is Dr. Yale Kneeland, Jr., assistant professor of medicine, both of whom are lieutenant colonels. Other members of the faculty have been granted leaves of absence to enter active service with the Medical Corps of the Army and Navy, according to *J.A.M.A.*

American College of Surgeons to Hold "War Sessions".—Announcement is made that the American College of Physicians will hold a series of one-day "war sessions" between April 1st and May 1st on problems of military service and civilian defense for medical and hospital personnel. There will be panel discussions on the treatment of war injuries and a forum on civilians as related to hospitals. The first session was held in Portland, Me., on April 1st. Other sessions will be held as follows: April 3rd, Albany, N. Y.; April 7th, Denver, Colo.; April 10th, Salt Lake City, Utah; April 13th, Portland, Ore.; April 16th, San Francisco, Calif.; April 18th, Los Angeles, Calif.; April 21st, Phoenix, Ariz.; April 24th, Dallas, Tex.; April 28th, Madison, Wis.; May 1st, Minneapolis, Minn.

Postgraduate Institute of Philadelphia County Medical Society.—The seventh annual Postgraduate Institute of the Philadelphia County Medical Society will be held in Philadelphia on April 13-15, 1942. The program will consist of symposia on modern therapy. On Monday evening, there will be a round table discussion on chemotherapy, led by Dr. Harrison F. Flippin, with the following participants: Dr. Ralph M. Tyson; Dr. Harry P. Schenck; Dr. Charles A. W. Uhle; Dr. S. Brandt Rose; Dr. John A. Kolmer, and Dr. John S. Lockwood. On Tuesday morning there will be a symposium on industrial health. The scientific exhibits are of unusual interest and value.

Section of Neurology and Psychiatry.—At a meeting of the Section of Neurology and Psychiatry of the New York Academy of Medicine, to be held Tuesday evening, April 14th, a case of gastric function in association with varying emotional states, as studied in a man with a large gastric fistula since 1895, will be presented by Dr. Harold G. Wolff and Dr. Stewart Wolf. Dr. Earl Chesher will read a paper on Varieties of vertigo in acoustic neuromas and the Ménière syndrome, which will be discussed by Dr. Miles Atkinson. A paper on "Ambulatory Insulin Technique in the Treatment of Schizophrenia" will be presented by Dr. Phillip Polatin and Dr. Hyman Spotnitz, and will be discussed by Dr. Nolan D. C. Lewis.

Anatomists to Meet in New York.—The fifty-eighth annual session of the American Association of Anatomists opened in New York on Wednesday, April 1st, and will continue through Thursday and Friday. Meetings will be held at Cornell University Medical College and the Hotel Commodore, New York. The president of the society is Philip E. Smith, Ph.D., of New York, and the subject of his address is "Some Aberrant Responses to Sex Hormones." Speakers scheduled to appear at this meeting include the following: Melvin H. Knisely, Ph.D., of Chicago; Edward H. Bloch, B.S. of Memphis, Tenn.; Edmond J. Farris, Ph.D., of Philadelphia, Pa.; Edgar Allen, Ph.D., of New Haven, Conn.; Frank Harrison, Ph.D., Memphis, Tenn.; Dr. Kendall B. Corbin, of Memphis, Tenn.: William H. Whitehead, A.B., of Chicago, Ill.; Earl W. Count, Ph.D., of New York; Dr. Joseph H. Globus, of New York; Dr. Hartwig Kuhlenbeck, Philadelphia, Pa.; Walter A. Stultz, Ph.D., of Burlington, Vt.; Dr. Joseph Krafka, Jr., of Augusta, Ga.; Albert W. Hetherington, Ph.D., of Chicago.

American College of Physicians.—The twenty-sixth annual meeting of the American College of Physicians will be held in St. Paul, Minn., April 20-24, 1942, with general headquarters in the Municipal Auditorium. "Medical Horizons" is the general theme of the program, and many timely topics will be discussed, including aviation medicine and problems of old age. There will be six general sessions. The first will be held on Monday afternoon with the general chairman, Dr. John A. Lepak presiding, and on Monday evening Dr. James E. Paullin, of Atlanta, Ga., will preside at the second. The other general sessions will be held on Tuesday, Wednesday, Thursday, and Friday afternoons. Panel discussions will be held in the Municipal Auditorium from 12 noon to 1:15 daily, from Tuesday to Friday, and there will be clinics from 9:00 a.m. to 11:30 a.m. each day, in five of the leading hospitals of St. Paul and two amphitheaters of the Medical School of the University of Minnesota. The annual convocation will be held Wednesday evening, April 22d, at which time Dr. Roger I. Lee will deliver the presidential address. The convocational address will be delivered by Dr. William deB. MacNider, Chapel Hill, N. C. His subject will be a "Consideration of the Factor of Change in the Animal Organism". Special features of the meeting will include the annual banquet and the exposition and technical exhibit. The officers of the college are: Dr. Roger I. Lee, Boston, Mass., president; Dr. James E. Paullin, Atlanta, Ga., president-elect; Dr. D. Sclater Lewis, Montreal, Que., first vice-president; Dr. Thomas T. Holt, Wichita, Kan., second vice-president; Dr. Samuel E. Munson, Springfield, Ill., third vice-president; Dr. William D. Stroud, Philadelphia, Pa., treasurer; Dr. George Morris Piersol, Philadelphia, Pa., secretary-general.

Medical Mission to Ecuador.—A mission is going to Ecuador to undertake malarial control, improvement of sewage disposal, and other modern sanitation measures, according to *Science*. Dr. George C. Dunham, director of the laboratories of the Army Medical School, Washington, D. C., who was recently appointed director of a new division of health and sanitation in the Bureau of Inter-American Affairs, will head the mission, and Dr. Walter C. Earle, specialist in tropical medicine, is one of the members.

Personal.—Dr. Alexander A. Weech, associate professor of pediatrics, College of Physicians and Surgeons, Columbia University, has been appointed professor of pediatrics at the University of Cincinnati College of Medicine to succeed the late Dr. Albert Graeme Mitchell.

Dr. Yolande H. Huber has been appointed consulting plastic and reconstructive surgeon to the New York Infirmary for Women and Children.

Dr. Allan M. Butler, of Boston, has resigned as Regional Medical Officer of the First Civilian Defense Region, to become head of the department of pediatrics at the Massachusetts General Hospital, Boston.

Dr. Duncan A. MacInnes, of the Rockefeller Institute for Medical Research, has been awarded the William H. Nichols Medal of the New York Section of the American Chemical Society, "for distinguished contributions to electrochemistry".

Dr. Lucius F. Badger, surgeon, U. S. Public Health Service, Washington, D. C., has been appointed assistant director of the National Institute of Health, Bethesda, Md.

Lieutenant Colonel Stanhope Bayne-Jones, medical reserve corps, U. S. Army, has been assigned chief of the subdivision of epidemiology in the Office of the Surgeon General, Washington, D. C. In civil life Colonel Bayne-Jones is professor of bacteriology at Yale.

Dr. Edward M. Bernecker has been appointed New York commissioner of hospitals, to succeed Dr. Willard C. Rappleye, who has resigned to resume his duties as dean of the College of Physicians and Surgeons, Columbia University.

Dr. Otto Loewi, research professor of pharmacology at New York University, New York, has been appointed Walker-Ames professor of pharmacology and physiology at the University of Washington, Seattle.

Dr. George Alexander Friedman of New York, delivered an address on Plastic surgery of dental interest before the Northern Dental Society, on March 26th.

Appointments to the Office of Civilian Defense.—Among the appointments in the Office of Civilian Defense recently announced in *Science* are the following: Dr. John S. Coulter, associate professor of physical therapy, Northwestern University Medical School, has been appointed Regional Medical Officer of the Sixth Civilian Defense Region, with headquarters in Chicago; Dr. Dudley A. Reekie, assistant director of health and chief medical officer of the Tennessee Valley Authority, has been appointed Regional Medical Officer of the First Civilian Defense Region, with headquarters in Boston; Dr. Leonard A. Scheele, passed assistant surgeon, U. S. Public Health Service, Bethesda, Md., recently assigned to the Washington staff of the Medical Division, Office of Civilian Defense; Dr. Harold Marks, passed assistant surgeon (Reserve), U. S. Public Health Service, recently on the staff of the National Institute of Health, Bethesda, Md., joined the Medical Division staff in January. Before being assigned to the Office of Civilian Defense, Dr. Marks was stationed at the National Institute of Health and was engaged in making surveys of medical care in defense communities.

Ohio State Medical Society.—The ninety-sixth annual meeting of the Ohio State Medical Association will be held April 28th-30th, in Columbus, with headquarters at the Neil House. Eleven distinguished guest speakers will appear on the program. These include: Dr. Frederick A. Coller, Ann Arbor, Mich.; Dr. Chester S. Leefer, Boston, Mass.; Dr. Richard H. Freyberg, Ann Arbor, Mich.; Dr. William G. Lennox, Boston, Mass.; Dr. Alson E. Braley, New York, N. Y.; Dr. Frank H. Krusen, Rochester, Minn.; Dr. E. V. Cowdry, St. Louis, Mo.; Dr. Merrill C. Sosman, Boston, Mass.; Dr. John H. Lawrence, San Francisco, Calif.; Dr. Tinsley R. Harrison, Winston-Salem, N. C.; Colonel L. G. Rowntree, Medical Corps, U. S. Army, Washington, D. C. Dr. Rowntree will discuss national defense. The officers of the society are: Dr. Harry V. Paryzek, president; Dr. Edward J. McCormick, president-elect; Dr. James A. Beer, treasurer; Dr. Charles S. Nelson, executive secretary; Dr. Richard A. Aszling, director of public education.

Reporting Venereal Diseases.—Current Selective Service medical and serological examinations emphasize the value to the practitioner of prompt compliance with the Venereal Disease provisions of the Sanitary Code. All registrants found infected with syphilis, gonorrhea, chancroid or lymphogranuloma venereum are referred by the Selective Service administration to the Health Department for further consideration. Where the registrant is under medical care by his physician and has been properly reported, no further action is taken. Where men are not under medical care, the need for rehabilitation, as well as for public health control of communicable disease, leads to intensive follow-up procedures to place all infected registrants under treatment. This follow-up is made by the Health Department by arrangement with Selective Service. Each physician should review his venereal disease cases and submit the required case report (417V) to minimize the possibility of inconvenience to him and particularly to his patients eligible for military service. A supply of the required forms and the regulations for reporting may be secured by application to the Bureau of Social Hygiene, 125 Worth Street, New York City.

Illinois State Medical Society.—The annual meeting of the Illinois State Medical Society will be held in Springfield, May 19, 20, 21, 1942, under the presidency of Dr. Charles H. Phifer, of Chicago. Dr. E. H. Weld, of Rockford, is president-elect; Dr. H. P. Saunders, of Chicago, is first vice-president; Dr. Fred H. Muller, of Chicago, is second vice-president; Dr. Harold M. Camp, of Monmouth, is secretary and treasurer.

State Medical Association of Texas.—The annual meeting of the State Medical Association of Texas will be held in Houston, May 11-14, 1942. Dr. Judson L. Taylor of Houston, is president-elect of the society and will be installed as president at this meeting. Dr. N. D. Buie, of Marlin, is the retiring president, Dr. Holman Taylor, of Fort Worth, is secretary and Dr. K. H. Beall, of Fort Worth, is treasurer. A scientific program of interest to physicians in all fields of medicine will be presented. The honor guest speakers include: Dr. E. T. Bell, Minneapolis, Minn.; Dr. Vilray P. Blair, St. Louis, Mo.; Dr. Louis A. Buie, Rochester, Minn.; Dr. O. Jason Dixon, Kansas City, Mo.; Dr. E. C. Hamblen, Durham, N. C.; Dr. Fred Jenner Hodges, Ann Arbor, Mich.; Dr. John H. Musser, New Orleans, La.; Dr. Tom D. Spies, Cincinnati, Ohio; Dr. Chester A. Stewart, New Orleans, La.; Dr. Leonard G. Rowntree, Washington, D. C. The Rice Hotel is headquarters for the association and all scientific activities, with the exception of the sessions of the Section of Public Health, will be held there. Dr. J. E. Clarke is chairman of the committee of general arrangements.

Iowa State Medical Society.—The ninety-first annual meeting of the Iowa State Medical Society will be held in Des Moines, on April 15th, 16th, and 17th, under the presidency of Dr. Carl B. Bush, of Ames. A complete program of the meeting appears in the March issue of the *Journal of the Iowa State Medical Society*. The first general session will be held on Wednesday morning, April 15th, when Dr. Bush will deliver his presidential address, Dr. James T. Priestley, of Rochester, Minn. will deliver an address on Carcinoma of the stomach, and Dr. John A. Toomey, of Cleveland, Ohio, will deliver an address on Differential diagnosis of meningeal irritations. At the Thursday morning general session, the following addresses will be presented: Treatment of raw surfaces resulting from burns and injuries, by Dr. Sumner L. Koch, of Chicago, Ill.; Cæsarean section, by Dr. John L. McKelvey, of Minneapolis, Minn.; Allergy, by Dr. French K. Hansel, of St. Louis, Mo. At the general session on Friday morning, the program will consist of a symptosium on injuries. The various sections will hold their meetings in the afternoons. A number of social events have been arranged. These include the annual banquet which will be held on Thursday evening, at the Hotel Fort Des Moines, with Dr. James C. Hill, of Newton, acting as toastmaster, and the military surgeons' dinner, to be held on Wednesday evening, at which Major Robert A. Culbertson, Medical Corps, Induction Center, Fort Des Moines, Iowa, will speak. The State Society of Iowa Medical Women and the American Medical Women's Association will meet on Wednesday, April 15th, under the presidency of Dr. Arline M. Beal, of Davenport. An interesting program of scientific moving pictures will be presented in the Hotel Fort Des Moines.

A POPULAR ESSAY ON AIR

SMITH ELY JELLIFFE
New York, N. Y.

In the days of ancient Greece when Empedocles, the philosopher of Sicily walked abroad in his purple robes and brazen sandles, he was honored as a god by the people whom his knowledge of natural laws had benefited. For among other things that were deemed miracles, he had dispelled the malaria that lurked in the marshes of Silenius, by cutting a cleft in the rocks behind the town and letting the north wind, the Tramontana, blow through and carry the pestilential mists away.

The popular marvel at the simple miracle shows how little was known in early days of the simplest principles of ventilation. The ancients made use of the moving air to winnow chaff from the grain and of the wind to fill their sails, and prophesied according to the quarter, the changes of the weather; but in the narrow limits of their experience, and the crudity of their philosophy they attributed all phenomena of the air to the whims of a deity.

In the early days of wisdom men followed the advice of Plato "Know thyself", and studied in vague speculations the workings of their own minds. In these later days there has been a great unfolding of secrets and discovery of natural laws, in obedience to that inward craving "to know that which before us lies in daily life". In the chain of discovery and inventions the links of events are so woven together that no one can be separated from the other as of chief importance, but the anchor of scientific progress was cast when Bacon in the sixteenth century turned man from the contemplation of himself as the centre of the earth which was itself the centre of existence, to find himself a detail of a little sphere which was in turn a microscopic detail of a universe. Since then there has been slowly dawning on men's minds an appreciation of that great and unknown Force of forces which holds all things in equilibrium. It holds in balance the pressure of air and the bodies on which the air presses. Whether it combines the gases of which air is composed in such proportions as will best maintain life, or whether the life of the earth is adapted to the proportions of the gases already existing does not alter the fact of a Force that holds life and air in equilibrium. The phenomena that we call winds and droughts and rains, the conditions of air which we call closeness or freshness, the powers we attribute to it of bringing or dispelling disease are but the balancing of forces which are infinite and eternal.

The Atmosphere

The broadest term applied to air is atmosphere which means literally the vapor surrounding our sphere. To conceive the absence of an atmosphere makes it necessary to conceive the absence of all forms of life with which we are familiar. It is said that in the moon, the inhabitants, if there were any, could neither hear the softest nor the loudest sound because there was no atmosphere. And it has been found that light is not visible in a vacuum. It would require a vivid imagination for a creature living at the bottom of the sea to picture a wholly different medium beyond its native element; but it is easy for the scientist to conceive of the atmosphere as an aerial ocean, which surrounds the earth for a depth of at least fifty miles, possibly two hundred. He has weighed a cubic inch of air at the sea level and found it to weigh one seven hundred and seventieth part of the weight of a cubic inch of water. Just as the weight of water covering a square inch of one's hand could not be felt when the hand was just submerged, but would crush it out of existence if the square inch extended upward for a mile; so the difference in pressure between the air at the top of the aerial ocean where it is supposed to roll in huge invisible billows, and at the bottom which is practically the sea level, is as proportionately great.

It was a pupil of Galileo, one Torricelli by name, who discovered the fact that the whole atmosphere pressed heavily on everything and in all directions. His experiment, which was as simple as it is famous, was practically the origin of the barometer, and consisted in filling a tube closed at one end with mercury, and then inverting it in a mercury bath, when it was found to stand thirty inches high in the tube. Pascal tried the same thing with water, with a very long tube and found that the water stood at thirty-four feet, proving that the atmosphere effected this pressure, for mercury is about thirteen times as heavy as water. He also tried the effect of the mercury tube on top of a high mountain, where he found that the column stood three inches lower than at the sea level, showing that the nearer the approach to the top of the aerial ocean the less pressure there is.

It would be an easy thing to calculate the exact depth of the atmosphere if air were incompressible like water. But air, as well as all gases, is composed of minute particles known as molecules which, like feathers, can occupy a very small compass or fly apart and fill a very large space. This may be seen by the force with which compressed air expands in an air gun. If a bladder half filled with air be put under the receiver of an air pump, and the air be pumped out, immediately the air in the bladder expands and fills it. Taking into consideration this property of the elasticity of air, it is easy to understand that it would be much more compressed at the sea level by reason of the weight of nearly fifteen pounds of air above it than it would higher up where there is less pressure. For all we know, when the atmosphere approaches its upper boundary, the air which is very near the surface and has practically no weight above it may be so expanded that what would occupy one cubic inch at the sea level would fill a hundred or a thousand times as much space. This is what makes the difficulty in calculating the extent of our atmosphere.

The effect of the difference of atmospheric pressure upon men and animals shows that there is a comparatively small margin allowed to preserve equilibrium. If a hollow glass globe be placed in an air receiver and the air gradually exhausted, the air inside the globe pressing at fifteen pounds to the square inch soon bursts it outward. If, on the other hand, the air should be exhausted from inside the glass globe, the weight of

the external air would crush it in. The same thing is true in a slight degree of the effect of the atmosphere on the human body. No mine is deep enough to make a very great difference in the increase of pressure, but experiments have been made upon men in diving bells and caissons. By increasing the pressure of the air to three or six atmospheres, that is to forty-five or sixty pounds or even more to the square inch, a caisson can be made to support the weight of water about one hundred and seventy feet deep. But the men, who enter such caissons to work, go from the normal air where the fifteen pounds pressing on their bodies is counter-balanced by the fifteen pounds pressure of the air inside, to where the equilibrium is destroyed by having three or four times as much pressure outside as inside. Such a change can be borne if it is made slowly enough to let the air inside of the body increase to correspond with that outside.

When healthy individuals have taken compressed air baths for the sake of experiment the pressure has been increased slowly for half an hour, then kept at a pressure of ten pounds extra to the square inch for an hour and then diminished. The effect of such a bath is to drive the blood inward by the greater external pressure to the organs that are protected from air, that is, to the heart, the liver, the spleen and kidneys. The veins and capillaries have less blood, while the arteries have more. This lack of equilibrium driving the blood inward decreases the pulse, and at the same time makes it easy to breathe as the air is forced into the lungs; therefore, the respirations become slower and deeper and are decreased from the average rate of sixteen or eighteen to four or five a minute. Under high pressure it is easier to make muscular effort. The senses of taste and smell and hearing are dulled, and there is pain in the ears until the air on both sides of the ear drum is restored to equilibrium. Should this change take place suddenly, as is sometimes the case when men increase or reduce the pressure in pneumatic tubes or caissons in three or four minutes, severe pains, unconsciousness and even death has occurred.

On the other hand, the effect of diminished atmospheric pressure on the human body is seen on high mountains or in balloon ascents. At ten thousand feet above the sea level the barometer shows a fall of nearly a third of an atmosphere. This is not injurious to health if the change is made gradually. At LaPaz in the Andes some eighty thousand people live quite comfortably at an altitude of 13,500 feet. Of course they draw more breaths a minute than do people living on the plains, for in high altitudes people breathe on an average an extra breath a minute for every three thousand feet they ascend. At an altitude of twelve thousand feet and upward men and animals ascending from the plains are subject to a sort of mountain sickness called the *soroche* due to the difference in pressure of the atmosphere.

In one of the celebrated balloon ascensions from Paris the balloon reached the height of twenty-eight thousand feet, the height of a Himalaya, too rapidly, when all of the aeronauts lost consciousness and two died. The rapid decrease in external pressure tended to drive the blood out through the mouth and nostrils and paralysis caused death. In one of the ascents by Mr. Glashier and Mr. Coxwell, the former lost consciousness through the too sudden rising to the height of twenty-nine thousand feet; but Mr. Coxwell thought he saw before he became insensible that the mercury stood as low as seven inches indicating an altitude of thirty-seven thousand feet. If so, this is the highest recorded trip toward the upper surface of our atmosphere. This contrasted with the other extreme where in building the Forth bridge in Scotland men worked in a caisson so far under water that the barometer rose to seventy-two inches, and they had to have about five atmospheres supplied them to maintain equilibrium, gives us the limits of barometric pressure thus far known which the human body can undergo.

Climate

The popular use of a barometer is to serve as a weather prophet, and the popular idea of weather is that it is a fitful shifting thing that goes by contraries; whereas weather is the definite result of certain combinations, which, however, are so subtle that it is difficult for any but those who understand meteorology to foretell the results. Although the mercury generally falls in the tube of a barometer before a storm, it does not imply that the approaching storm affects the pressure of the air, but rather that the decreased pressure which the barometer at once registers may in combination with other things cause a storm. Given a definite amount of heat to vaporize water, and a definite extent of water surface to yield moisture, and a definite capacity of the air to hold moisture, and it will be seen that the rain and fair weather are but the efforts of the atmosphere to keep its water and heat in equilibrium.

The heat of the air and the amount of moisture contained in it, together with the pressure of the atmosphere, make what is collectively known as climate. These conditions may vary in places within a few miles of each other. Thus, people suffering from throat troubles in seaboard cities will frequently find relief in inland towns near by.

It is astonishing to see what extremes of heat and cold the human body can endure without altering its standard temperature of about 98.5° F. The highest temperature recorded as endured by man was reported by two scientists who entered a dry oven heated to 260° F.; whereas the lowest temperature reported by any Arctic explorer was 70° F. below zero, or 102° below freezing. Both of these conditions would have been unendurable if the air had not been dry. As the pressure decreases the air cannot hold so much moisture, so at high altitudes there is no perceptible dampness in the air, and in mountain resorts invalids suffering from tuberculosis can often sleep with windows wide open, although frequently the dry cold night air has a temperature of 11° F. below zero.

The heating effect of the sun's rays is greatly affected by barometric pressure. At the sea level the difference between noonday heat in the sun and the shade is very marked but at a considerable altitude it is still greater. As the pressure diminishes the moisture decreases and the sun's rays are therefore more easily transmitted through the attenuated air; and if they fall upon snow and are reflected, the temperature in the sunshine will be very much warmer than in the shade where the heat is transmitted in the ordinary way by transmission and refraction. One writer states that when he was lunching with a friend on the hotel piazza of an Alpine re-

sort they were perfectly comfortable in the open air although surrounded by snow. His friend called him to ask help in lighting his cigar by means of a burning glass in the sunshine, and when he had accomplished this, he returned to find that his coffee which he had set in the shade was frozen.

The actual heat of the sun's rays above the average temperature of the air can be ascertained, not by putting one thermometer in the sunshine and the other in the shade, but by placing in the sunlight two thermometers whose bulbs are enclosed in a vacuum to protect them from wind and moisture. One of these, however, must have its bulb coated with lamp-black by which means it will absorb the sun's rays; while the other will reflect them. The higher reading of the black-bulbed thermometer over the plain one indicates the difference between the average heat of the air and the actual heat of the sun's rays. The effect of sunlight on snow thus greatly increases the feeling of heat, for the sun's rays are turned back into the air instead of being absorbed. Bodies that absorb heat easily generally give it out easily, as is seen in the case of a piece of iron which in the sunlight will be almost too hot to touch but in the shade soon seems colder than the surrounding temperature, for in the effort to keep all things at an equilibrium, the bodies that took heat in most rapidly must most readily return it. This principle has a practical effect in the absorption and radiation of heat in soils for it keeps the surface of the earth colder than the air a few feet above it. (This may readily be seen by taking the temperature of a grass plot and the temperature of the soil on gravelly or rocky places, when the former will be found perceptibly cooler than the latter because grass radiates heat into space more rapidly than do the rocks.)

The effect of climate is not confined to the air alone but depends also on the soil, which is by no means a solid mass but contains a considerable quantity of air, only the hardest rocks being free from it. Within a few inches of the surface the temperature of the soil is about the same as that of the external air; but as the depth increases the heat of the air in the soil increases in cold weather and decreases in warm weather. Frost does not penetrate more than three or four feet, and at the depth of sixty feet, which is as far as the effects of the atmosphere can go, the temperature of the soil is much warmer in winter than the external air. It is curious to notice how slowly the change in the earth's temperature follows atmospheric change. Two or three days must often elapse before the soil at a depth of two feet will follow a rise in the temperature of the air; and then it is only the general fall or rise that is followed. In hot weather the soil is cooler than the air and gains its heat but slowly. According to experiments made by lowering thermometers into a shaft especially constructed for such a purpose, it was found that the soil three feet deep attains its greatest heat sometime in August, six feet in September, and twelve feet in October, while the periods of greatest cold took place according to the depth sometime after the greatest cold of the atmosphere.

It has been claimed that the rise of an epidemic of cholera infantum and summer diarrhea does not follow the rise of the temperature of the air, but corresponds with the rise of the temperature in the soil. An epidemic does not become prevalent until the temperature of the soil reaches 60° F. at the depth of one foot, or 56° F. at a depth of four feet. It is also found that the disease does not attack persons living in houses built on hard rock, but that it is fearfully prevalent in dwellings built on made ground or on sandy or gravelly soil. It is therefore inferred that the cause of the disease is a microorganism which lives in the decaying matter in the surface soil of the earth, and depends on a certain temperature of the air in the soil for its growth, and that when it has spread through the earth it may easily be borne into the air by the warmer air of the soil which rises at night. The fact that high winds dispel the disease while they last seems to show that they blow away the strata of infected air above the soil.

The presence of moisture in the air may be readily seen by filling a glass with ice water on a warm day. Immediately a fine mist consisting of minute globules of water will spread over the outer surface of the glass. This water was as truly present in the air before the presence of the cold surface as afterwards, but it was held in the form of watery vapor. The amount of vapor that can thus be taken up varies with the temperature, the amount that can be contained increasing with the temperature. This amount varies from one to twelve grains in a cubic foot of air.

As a rule, the ordinary air we breathe contains about two-thirds or three-quarters as much water as would saturate the air, or bring it to the dew point, where under a given temperature the air could not vaporize any more water without forming dew on the nearest surfaces. It has been found that particles of dust in the air are necessary to form fog. They serve as the colder substance which condenses the water in a nearly saturate atmosphere; but the particles they condense are so small that they remain suspended in the air instead of falling as rain or mist as they generally do in the open country where the particles of matter are fewer. It requires a very nice balance between temperature and moisture to maintain a fog, and a heavy rain by washing the air free from particles will destroy the possibility of one.

On a warm day moisture is taken into the air by the process of evaporation from every exposed water surface and everything wet with water. Light clouds in the sky disappear, puddles of water vanish, clothes that are hung to dry have every particle of moisture vaporized, and the perspiration of the human body is evaporated as soon as it appears. On the other hand, on a damp humid day the air is already nearly at the saturation point, it can hold but very little more water as vapor, so wet things remain damp, and the perspiration is checked because that which already lies on the skin will not evaporate. Thus the equilibrium between the watery vapor of the human body and the atmosphere is destroyed and discomfort is felt. If at this point the temperature is lowered several degrees the same thing will happen as when the presence of a glass of ice water lowered the temperature of a few cubic inches of air; a certain amount of the vapor will be turned into water and will fall as a shower. This is the explanation of a sun shower, for the watery vapor has not been borne up by the hot air to those higher colder strata where it is transformed into the great masses of dew known as cloud, but the air has reached the saturation point and a very slight fall of temperature precipitates the vapor in the form of water.

The same thing happens every night in summer in moist climates and is known as the fall of dew. When the sun sets the earth, and especially that covered with grass or foliage, radiates its heat very rapidly and cools the strata of air lying close above it. On a still clear night when radiation is not prevented, this stratum of cooler air lowers the temperature of the warmer air above it below the saturation point and the moisture is deposited on the countless small blades of grass and low herbs which are colder than the rest of the air, in the form of dew. If the night turns very cold this dew freezes and becomes hoar frost. Heavy dews cool the air of a warm climate very perceptibly, for in order to transform an ounce of dew back into vapor the next morning a large supply of heat is required. While the dew is being evaporated the morning is generally cool. It is this same principle that makes the temperature pleasant near a lake or near the sea. Until the air reaches its saturation point it will continue to evaporate water on warm days, and must use its own heat to do so, thereby keeping the temperature considerably lower than it would be in a dry country without water courses.

As before defined, climate is a combination of the effects of temperature, moisture and altitude as affected by the natural surroundings of a place. People in general do not as a rule estimate climate by the percentage of moisture, but by the visible effects upon human bodies or upon crops. A temperature that does not vary greatly, provided the mean temperature is a medium one, is the best to live in, as for example, the climate of California varies between 50° and 80° F. and for constitutions that need a healthful climate is an excellent one to live in. On the other hand, a variation of one hundred degrees, as in parts of Siberia where the thermometer stands at 69° F. in its warmest, and —44° F. in its coldest weather, is decidedly unpleasant if not injurious.

The warm ocean currents caused by the waters heated near the equator finding their way around the continents toward the poles affects the climate, as may be seen in the Alaska promontory where the north side is washed by the Arctic stream from Behring Strait, and is inhabited by walruses, while the south side, being bathed by a warm equatorial current diverted from the shores of Japan, is the home of humming-birds. The warm winds known as the north-east and south-east trades blow from the poles toward the equator to replace the ascending heated air of the tropics, and the warm air caused by the warm currents have a great effect upon the climates of the countries they pass. The effort of the air to maintain equilibrium is illustrated in the monsoons of India. In April, when the whole surface of the continent becomes hotter than the surrounding sea, the air is rarified and rises, and is replaced by the cooler air from the ocean which, however, is laden with moisture taken up by evaporation. This moisture is held as vapor until it reaches the cold mountain ranges which it cannot pass and where it is condensed as rain. It is this principle that generally makes seaboard countries with mountains in their rear very fertile, while the country lying on the other side of the mountains may be very arid, as is seen in the rich California slope of the Rocky Mountains, and the dry alkaline deserts which no moisture-laden air can reach, behind them.

The sea and land breezes of maritime countries are explained by scientists as a part of the atmospheric circulation to maintain equilibrium. When the air over the land is heated and expanded, it pushes the upper strata off. They slide off to the sea, and by the extra pressure push the cool sea breeze toward the land to take the place of the rarified air. At night the opposite effect is seen. The land air is cold and therefore compressed, so the warmer air from the sea slides over it and presses it out as a land breeze.

The hottest regions of the world are not at the equator but on the banks of the Senegal in West Africa, in some parts of Arabia, and in the deserts of Australia; this is due to the absence of moisture, while at the equator, the north and south trade winds meet in the upper atmosphere and produce rains. The coldest region of the world is not at the pole but about ten degrees from it north of Behring Strait. There the mean temperature is between 17° F. and —19° F. The people living in dry cold climates do not seem to suffer from the temperature, but rather from their lack of vegetable diet caused by the scarcity of vegetation, and from diseases of the eyes caused by the glare of the sun upon the snow.

The fact that some animals can live in certain climates and not in others shows that a certain degree of heat or dryness or a certain altitude is especially adapted to their needs, and if these are lacking it is impossible for them to adjust themselves to the change. Although certain races of men are more accustomed to some climates than to others, nevertheless by his knowledge of the laws of nature man has been able to live in comfort in nearly all climates, by adapting his clothing, his dwellings and his food to the various conditions of the atmosphere.

The Composition of Air

The ocean, with its power to make and unmake continents, has no less wonder in each individual drop than it has in its restless waters as a whole, and in the same way examination of a single breath of air reveals as much interest and is of as much importance to mankind, as is the knowledge of the great forces of the atmosphere that balance each other in tornadoes and in calms. It would be hard to define this invisible odorless medium which is man's native element; but whether or not he names it in scientific terms or draws the breath of life scarce knowing that he lives, it nevertheless is the fundamental necessity of his existence. Man can live for a long time without water, without light, without food; but deprive him totally of air for a few moments and he will die. Moreover, if life is to be healthful he must have what he calls fresh air.

It was held in olden days that air was a simple gas, an element. With earth and fire and water it made a quartet of forces of whose nature little was known but their existence. Today, the word air stands as a simple name for a combination of gases which is by no means simple. The schoolroom experiment of covering a lighted candle floating in a dish of water with a bell jar shows that at least two gases exist in the air, for after a few moments the candle goes out having exhausted the supply of one gas called oxygen which is necessary for combustion. When the remaining air is cooled the water will be observed to rise in the jar filling about one-fifth of the enclosed space. This

shows that the remaining gas which is nitrogen occupies, roughly speaking, about four-fifths of the atmosphere. The same effect would have been produced had a mouse instead of a lighted candle been placed under the jar, for when it had breathed all the oxygen it would have died and the water would have filled the space occupied by the consumed gas. The question arises then whether or not the presence of nitrogen gas, which is deadly to life and combustion, does not render all air impure, and whether or not an atmosphere of pure oxygen would be desirable. Experiments have shown, however, that burning is so intense in pure oxygen that a spark on a charred match will burst into flame in its presence, and even iron will burn. A fire once started in an atmosphere of oxygen would waste a continent without hindrance. As for animal life, to breathe air that is in the proportion of even half oxygen and half nitrogen is to produce violent fever which would soon cause death. Nitrogen is not a poisonous gas; it simply will not support life if left to itself. Its action is purely negative and is used to dilute oxygen to just that proportion which is necessary to maintain life in the world.

(To be continued)

WARTIME INCREASE IN MALE BIRTHS

N. O. LUNDELL
Far Rockaway, N. Y.

In my opinion the wartime increase in male births is brought about by very definite factors. These same fundamentals have been utilized by both Italy and Germany while America slept the sleep of skepticism. Their intensive training of all male youths was not alone for individualistic health building, but also to increase male births for future armies. A copyright article on predetermination and control of sex was in their medical libraries. They capitalized its information, as a member of the clergy warned the author. It was copyrighted in an effort to forestall such an eventuality.

Every cell in the human body is a separate, distinct, and individual living entity. Each and every one has a prenatal formative stage followed by birth to its particular type. At this stage it is not a perfect functioning creation, but must go through adolescent development to maturity and full functioning capabilities. We then have a varying period of functional life followed by a period of retrogradation and death. New generations are constantly in the process of formation to replace those that have passed on.

It is a known fact that every cell is nourished by the blood and depends upon lymph for its complete metabolism. We know that ionic electricity plays a most important part in cell division and every phase of cell life. Each cell depends upon its individualistic chemicophysical and ionic electrical composition for its functional capability. These elements are supplied by the blood with the lymph as a metabolic aid. The function of the mature cell is directly dependent upon the nourishment received, metabolic perfection and absence of neighboring inflammation.

The sex cells are nourished by the blood and in the absence of adjacent inflammation we may gain a fair knowledge of the vitality to be expected of these cells by a careful blood examination. Sexual abuse or intemperance may well deplete the supply of mature cells and in that case we could not expect an immature cell to give us the same result, that the blood picture indicates for a mature one. Inflammation alters cellular composition and functional ability.

It is reasonable to assume that the chromatin content of a cell is dependent upon the supply. The latter comes from ingested food and is delivered by the blood. The sex cell nourished by the better blood is naturally going to have a richer chromatin content.

In the process of conception we have two cells uniting to form the new creation. The one nourished by the better blood will naturally be richer in its chemicophysical and ionic electrical composition, and will contain more chromatin. Throughout nature we have domination and survival of the fittest, and so with the sex cells. The stronger will dominate the weaker and determine the sex.

In plural births the sexes will depend on various factors. A double yolk, or binuclear cell may have different composition as regards nuclear elements, to such a degree that one contained more chromatin than the other and in this instance the resulting Siamese-Twins would be of sexes dependent upon the comparative composition of the nuclear elements of the fertilizing spermatozoa. When two female cells are fertilized the sex of the resulting twins then depends upon the individual nuclear compositions resulting from nutritive possibilities during development.

If both male and female cells have been nourished by identical bloods and the chromatin content is equal, there can be no domination and the resulting creation will have both sexes manifested equally, that unfortunate creature called the hermaphrodite. Feminine traits will manifest themselves in males in direct proportion to the degree of domination of male cell chromatin. Masculine traits in the female are dependent upon the degree of domination of female cell chromatin.

In very war the males are taken from sedentary occupations and lives of dissipation, and forced to lead outdoor lives with more regular hours of rest, plenty of exercise and good simple, wholesome food. Naturally this builds up the sixty percent of our national manpower that has entered war service and gives them a twenty percent domination over the physically unfit who remain at home and continue to breed. Of this twenty percent we find that all do not enter the field of matrimony and still others do not propagate for one reason or another. This accounts for the comparative small increase in the male births in spite of the fact that the great majority of the men are possessed of bodies and physiques superior to the women. This increase in male births will continue until the men relapse into their former sedentary lives. Man has permitted himself to become the weaker sex. Are we going to do anything about it?

1033 Nameoke Street

Medical Milestones

David Grüby, Dermatologist

The science of medicine and the related science of biology have had many students and practitioners, some of them famous, others not well known but nevertheless worthy of note for their contributions to human knowledge. Among the latter was David Grüby, Hungarian biologist and physician of the eighteenth century. Although his degree in medicine included one in ophthalmology, Grüby's special interest was in diseases of the skin.

David Grüby, born in 1810, was the youngest son of simple farmer folk. He did not care for farming, nor could he endure being apprenticed to a watch- and spectacle-maker; he talked incessantly of becoming a doctor if he could manage to get the proper education. So finally his parents gave up trying to discourage their young son's "preposterous" desires and he was sent on his way to seek for medical learning, equipped only with an apple, a loaf of bread, and a single coin worth about fifty cents.

Working his way, the boy finally reached the village of Pest, later joined with that of Buda to form the capital of Hungary. Here he was considered ineligible for study at the university, but his zeal in finding places near doors and windows from which to eavesdrop on lectures aroused the interest of one of the professors who finally was able to arrange for him to enter some of the classes. Later the boy was able to make his way to Vienna, but in such dire poverty that he and the friend with whom he shared an attic room had to club together to buy candles to study by. They would read over a paragraph, then blow out the light and try to repeat the gist of what they had read, relighting the candle for the scanning of a second paragraph as soon as the former one had been memorized. When the rent collector appeared in the offing, the boys would generate chlorine gas, so evil-smelling and so disturbing to respiration, that the collector, fearing black magic, would "forget" to make his call. By saving bits of metal, wire, glass and other junk, Grüby managed to put together a very serviceable microscope of sorts, through the use of which he was able to get enough material for his first published paper on the morphology of pus cells. At this time the young student's chief interests were in anatomy, physiology, pathological anatomy, ophthalmology, *and* dancing. He was quite a ladies' man during his younger years, and became known as the best waltzer in all Vienna, a great tribute to his terpsichorean abilities from that city of the waltz. He never married.

Medical Degree, Then Paris

In 1839 Grüby received his degree in medicine with a thesis on the influence of water on animal economy, which unfortunately was never published and so lost to posterity. In a few years his work attracted so much favorable attention that he was offered a professorship at the University of Vienna. But Paris, the end and aim of all young physicians of the time, was calling alluringly to the ambitious Grüby. He travelled there at once and immediately was accepted as a member of the staff of the Hôpital St. Louis and the Salpêtrière, the dermatological and neuropathological services of which were at that time the most famous in the world. Later he was put in charge of the pathological laboratory of the Foundling Hospital.

In 1848 he became a naturalized citizen of France and opened a course in pathological anatomy which soon became famous throughout Europe, instructing such well known pupils as Magendie, Flourens and Claude Bernard. Many papers were read by Grüby at the Academy of Science, and then, either shocking or arousing the ridicule of the "humoralists," a new subject heading in medicine was created by this young stranger; it was "parasitic medicine." Our present day study of fungous diseases dates from this point. Grüby was the first to discover the true nature of human ringworm. He proceeded to describe accurately the favus crust, a medical contribution upon which the studies of many later dermatologists were based. Next came investigations by Grüby of thrush, of the hairy regions of the body, of ringworm of the scalp, and porrigo decalvans. Although Grüby's clinical descriptions are not always clear, often incomplete, and sometimes inaccurate, his mycological expertness can only arouse wonder when we consider how inadequate were the microscopes of his time. He was a master of this technique of such outstanding ability that Sabouraud wrote, when describing a certain parasite he was studying, that Grüby's description, written a half century earlier, was far superior to his own.

A New Epoch In Medicine

With the newly discovered "parasitic dermatoses" a new era was inaugurated, not only for dermatology but also for medicine itself. Grüby continued the investigation of his own special field, particularly along the lines of comparative anatomy, and studied the already discovered Demodex folliculorum, found an organism he named the trypanosome in frog's blood, investigated the chyle apparatus of suckling mammals, the purple-bearing organ of shellfish, an epidemic disease of potatoes, and experimented with the effects of ether and chloroform. He was the first to study a streptothrix-like fungus found in the tear ducts, afterwards described by Albrecht von Graefe.

In 1854 Grüby received permission to practice medicine in France and soon became one of Paris' most famous and popular physicians. It is interesting to find that he made frequent use of psychotherapeutics in his treatment, holding that the influence of the mind upon the body had never been properly recognized. Among celebrated personages among his patients were the two Dumas, the composer Ambroise Thomas, Count Eckstaedt, Max Nordau, Alphonse Daudet, Chopin, Liszt, Heine, Lamartine, and Georges Sand. Grüby seems to have been especially successful in treating stomach ailments and the psychoneuroses.

Medical historians have often deplored Grüby's desertion of the science of the laboratory for a medical practice. One historical authority writes: "The abandonment of his investigative work involves a most profound psychological change which it is impossible to fathom. What would this man have accomplished had he continued his scientific work?

During the last two decades of his life, Grüby became much interested in and contributed largely to many philanthropical works and educational institu-

tions. In 1890 he was made a Chevalier of the Legion of Honor. Toward the end of his life his popularity waned and his practice diminished. One day he shut himself in his apartment and ordered that he be not disturbed. After two days of hearing nothing from him, his servants forced the door and found him apparently quietly asleep. But he was dead; this was on November 14th, 1898. German medical literature ignored him completely; if he was referred to at all, he was called a Frenchman. His colleagues in France, however, have paid him high tribute; they called him an eccentric, but they recognized his genius.

Medicoliterary Notes

British publishing seems to carry on, in spite of everything. A recent announcement from the Hogarth Press, with temporary quarters in Letchworth, Hertsfordshire, presents a noteworthy list of noteworthy publications, among them, *From Thirty Years with Freud,* by Theodor Reik. Dr. Reik gives a fascinating account of his long collaboration with the founder of psychoanalysis. The book will appeal, not only to the student of Freud, but also to the general reader. The new volume is Number 32 of the International Psycho-Analytical Library.

* * *

An Old Doctor of the New School is the personal history of Dr. James C. Wood, of Cleveland, Ohio, author of one of the well known textbooks of clinical gynecology. Here is the story of a doctor who started his career in "horse and buggy days" but has kept right up with the times, always avoiding intolerance, always living up to the liberal and open-minded standards of modern medicine. The book is published by the Caxton Printers of Caldwell, Idaho.

* * *

New books recently announced by the Chemical Publishing Company include *Manual of Endocrine Therapy* by Bernard L. Cinberg, *Poulsson's Textbook of Pharmacology and Therapeutics* by Stanley Alstead, *Medical Manual of Chemical Warfare, Food Manufacturing* by Saul Blumenthal, and *Drug and Specialty Formulas,* by Emil J. Belanger.

* * *

Recent publications of the Jaques Cattell Press of Lancaster, Pennsylvania, include several volumes of *Biological Symposia,* a series devoted to current material in the field of biology. Volume II includes symposia on speciation, defense mechanisms in plants and animals, the biological basis of social problems, and regeneration. Volume III is devoted entirely to a discussion of muscle, and Volume IV includes symposia on population problems in protozoa, experimental control of development and differentiation, species concept, and other topics. Volume V is devoted to biochemistry, and Volume VI, the publication of which is announced for April, to genetics. Projected Volumes VII and VIII will be devoted respectively to visual mechanisms and levels of integration in biological and social systems. Another recent and interesting publication of the Cattell Press is entitled *About Ourselves.* It is by Professor James G. Needham, formerly of Cornell University, and is a survey of human nature from the zoological point of view. It presents a condensed statement of some of the contributions of zoology to the knowledge of the nature of the human species, and relates these matters to the organization and operations of society. The book is beautifully illustrated by William D. Sargent.

* * *

Other books of interest to the physician announced for Spring publication include *Time and the Physician,* the autobiography of Sir William Osler's successor at Johns Hopkins, Lewellys F. Barker (Putnam); *Doctor Bard of Hyde Park,* the story of a famous physician of Revolutionary times, the man that saved Washington's life, by John Brett Langstaff (Dutton); *Civilian Health in War Time,* by Dr. Francis R. Dieuaide (Harvard University Press); *Psychological Effects of War on Citizens and Soldiers* by Dr. R. D. Gillespie (Norton); *Psychotherapy with Children* by Dr. Frederick H. Allen (Norton); *Race, Reason and Rubbish,* a primer of race biology by Gunnar Dahlberg (Columbia University Press); *Alcohol Explored* by H. W. Haggard and E. M. Jellinck (Doubleday, Doran); and *Modern Medicine: Its Progress and Opportunities,* by Netta W. Wilson and Dr. S. A. Weisman (Stewart).

Connotations

Lawson Tait wrote in the *British Medical Journal,* September 1, 1890, under the caption, Criticisms of Sir Joseph Lister's address before the International Congress at Berlin on the 4th day of August, 1890. Tait strongly rejected the phagocytic theory, and stated "that instead of the septic or antiseptic fact, Lister and his still more illogical disciples talk of the septic or antiseptic theory, whereas there is no theory about it at all, but an absolute and ludicrous logical error." In conclusion he stated: "Lister says keep out the germs and you may leave blood-clots and other matters to take care of themselves. My view is get out all decomposable matter and you can let the germs in freely."

* * *

Davy gave his directions for controlling hemorrhage in amputation of the thigh as follows: "Oil having been injected into the bowel, the conic end of a rod is introduced into the rectum and passed in the direction of the vessel to be compressed, the surgeon feeling the end of the rod through the abdominal wall, directing it to the common iliac as it lies upon the pelvic brim. The handle is now carried to the opposite side and raised so that it acts as a lever, the anus serving as a fulcrum."

* * *

Empirical asepsis was practiced by the pupils of Susruta, a Sanskrit writer, 1000 B. C. He advised his students to keep their hair and nails short and to wear white coats. Varro, in 127 B. C., taught that infectious diseases were caused by microorganisms.

* * *

Von der Velden was the first to note that in most cases of cancer of the stomach the gastric juice had feeble digestive power and contained no free hydrochloric acid.—H. J. Sims, M.D.

MEDICAL RECORD
INCORPORATING THE
New York Medical Journal, Philadelphia Medical Journal
Medical Record, Medical News, Medical Herald
Kansas City Medical Index-Lancet, Medical Fortnightly,
St. Louis Clinique, General Practitioner, Laboratory News

Published on the first and third Wednesday of each month by
THE MEDICAL JOURNAL AND RECORD PUB. CO., INC.

GREGORY STRAGNELL, M.D. - - - - - *Editor*
A. M. MARLATT - - - - - *Assistant Editor*
N. F. HANF - - - - - - *Business Manager*
C. A. MCHALE - - - *Advertising Manager*

Subscription Price: Under Domestic Postage, $4; Foreign Postage, $5.50; Single Copies, 25 cents.

Remittances should be made by New York Exchange, post office, or express money order, payable to The Medical Journal and Record Publishing Company, Inc., or by registered mail, as the publishers are not responsible for money sent by unregistered mail. Remittances from Foreign Countries should be made with International Money Orders.

MANUSCRIPTS

All material for publication should be sent to The Editor of the MEDICAL RECORD.

Exchange Publication: Original articles are accepted with the understanding that they are contributed only to the MEDICAL RECORD.

Preparation: Material must be typewritten and double spaced on substantial paper. Carbon copies or single spaced manuscripts will not be considered.

Changes other than the correction of errors will not be permitted after the article has been set in type, so be sure and write your paper the way you want it printed.

Illustrations: Photographs should be numbered and should carry the legend on the back, with the title of the article, and should indicate the top of the picture. Glossy paper produces the best half-tone. Drawings and charts for reproduction should be made in black India ink. Legends for illustrations should be typewritten at the end of the manuscript.

The bibliography should follow the style of the Quarterly Cumulative Index Medicus of the A. M. A. and should contain the name of the author, title of the article, name of the periodical, with volume, page, month, day of month, if weekly, and year.

The manuscript should carry the address of the author.

Reprints are furnished. Prices can be secured after the article is in type.

All the material published in the MEDICAL RECORD is copyrighted and should not be reproduced without our permission.

We would appreciate any items of current interest which our readers may send in.

WEDNESDAY, APRIL 1, 1942

Medicolegal Notes

Disposition of Hospital Bequest

The trustee under a will was authorized to appoint as the beneficiary of a charitable trust thereby established a hospital which was in need of present funds. In an action to approve a contract which had the effect of terminating the trust and directing the trustee to pay over the corpus thereof to the parties in interest, the Colorado Supreme Court held, in re Nicholson's Estate, 104 Colo. 561, 93 P. 2d 880, that the hospital could, by the contract, waive its right to receive its share of the trust fund at some future time in consideration for a specified sum to be paid immediately after the contract was made.

Physical Examination as Privileged Communication

Where a doctor in a personal injury action testified directly that he did not examine the plaintiff for the purpose of treatment, the Ohio Court of Appeals held, McMillen vs. Industrial Commission, 37 N. E. 2d 632, that this answer in connection with others showed positively that the examination was made for the sole purpose of determining whether the injured person had a right of action. Under this situation it could not be considered as a privileged communication.

Hornbeck, J. dissented, being of opinion that "the right of the plaintiff to have the expert advice of the physician respecting the bearing of his physical condition upon his civil rights was as important and should be as carefully protected as would his right to be treated to correct such condition."

Successive Accidents as Affecting Insurance Carriers' Liability

Where a primary industrial accident caused a fracture which does not unite or results in poor bony union and therefore a weakened condition exists so that a secondary or subsequent event causes the disability to be prolonged, the original accident is responsible for the ultimate resultant condition. Where a reasonably prudent person innocently aggravates the harmful effect of the original injury, the original wrongful cause continues to the end and accomplishes the final result. The employer's insurance carrier at the time of the original injury, therefore, and not another insurance carrier at a later date, when the weakened member "gives way," would be liable for the compensation. Quinn vs. Henry Becker and Son, Inc., 19 N. J. Misc. 508, 21 A 2d 617.

Testimony of Physician as to Patient's Complaints Held Inadmissible

The testimony of a physician who examined the plaintiff in a personal injury action after the injury that the plaintiff complained of "severe headaches since date of injury, more or less continuously all the time" was held inadmissible because the complaint was of specific pains and not a mere general complaint. The further statement that the plaintiff was sent to the physician to be examined as having been jerked down from a railroad train and carried a considerable distance was also held inadmissible as hearsay and prejudicial to the defendant. But the physician's statement that plaintiff had a cut on his cheek, an injury to his left arm and hand and wrenched neck and shoulders was admitted as a statement of the physician's own observation. Alabama Great Southern R. Co., vs. McBryar, Georgia Court of Appeals, 15 S. E. 2d.

Coronary Thrombosis from Injured Hand as Cause of Death

The Pennsylvania courts hold that in workmen's compensation proceedings the credibility of medical witnesses and the weight to be attached to each are exclusively for the Compensation Board when they testify concerning the causal relation between injury to an employee and his death. Where any conflicts appear in their theories or opinions, it is for the board to decide which conclusion it will adopt.

This rule was applied to an injury to an employee's left hand and his death six months later from coronary thrombosis. The testimony of one of the medical witnesses that an embolism came from the injured hand and caused the employee's death from coronary thrombosis was held sufficient in quality to sustain an award of compensation to his widow. Swalm vs. J. H. Brokhoff, Inc., 20 A. 2d 797.